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Savage M/99RS	127.00	30.00	20.00
Marlin M/336 Carbine .30-30	70.95	15.50	8.50
Marlin M/336A Rifle .30-30	83.95	20.00	12.00
Marlin M/336 Carbine .35 Rem.	80.80	19.25	12.00
Marline M/336A Rifle .35 Rem.	94.45	22.50	14.00
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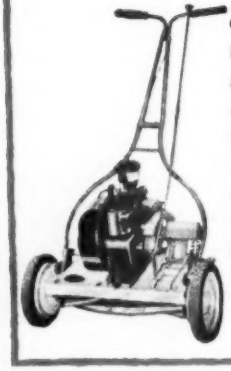

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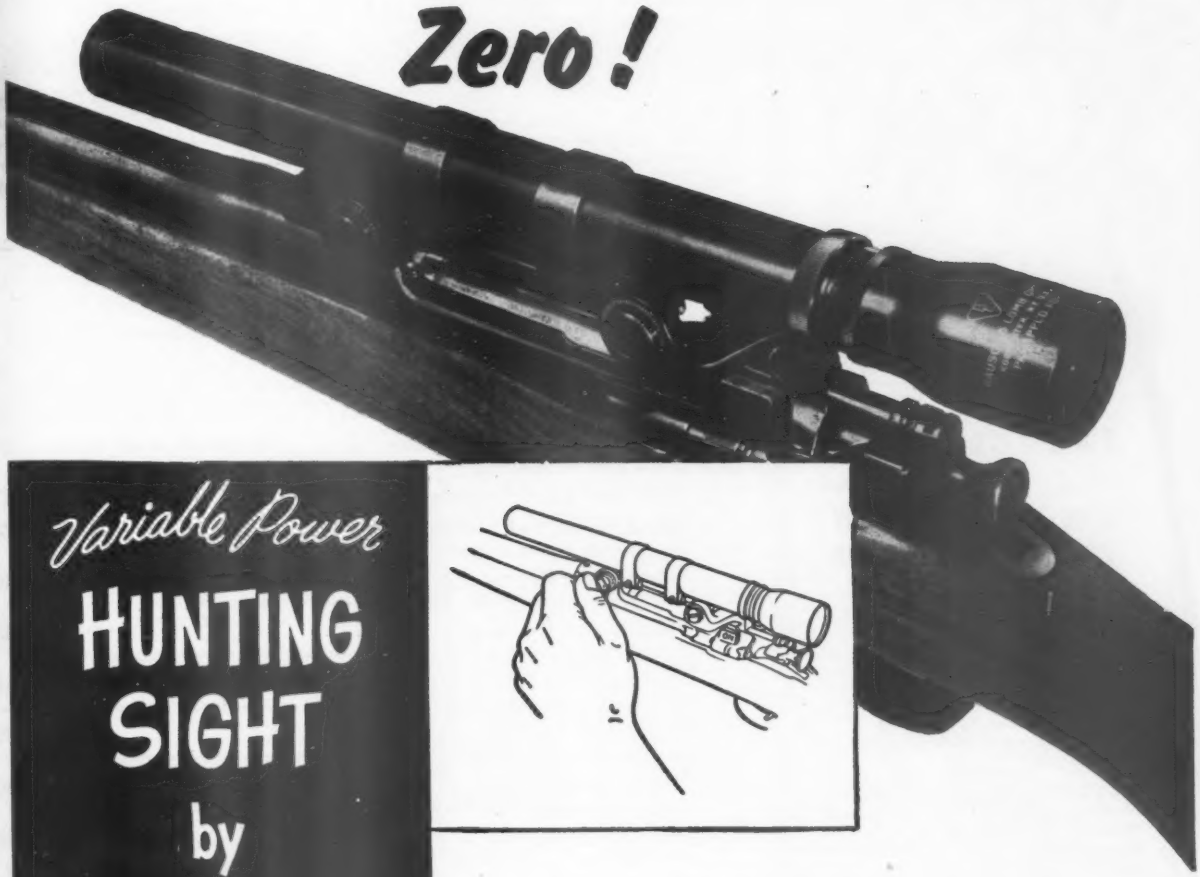

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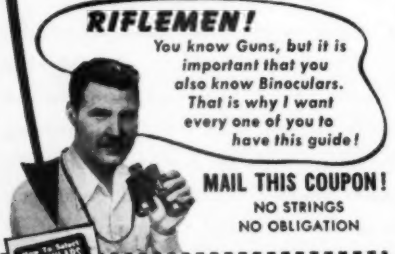
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COVER

The ivory-stocked wheellock pistols on this month's cover are treasured possessions of Manhattan's Metropolitan Museum of Art. But one other pair of these Dutch wheellock arms is known to exist. For more by Stephen V. Grancsay on the use of ivory on guns, see the article beginning on page 44.

Published monthly by the NATIONAL RIFLE ASSOCIATION OF AMERICA, 1600 RHODE ISLAND AVENUE, WASHINGTON 6, D. C. Domestic Rates (North, South, and Central America) $4.00 a year, $7.00 for two years, $10 for three years; elsewhere add $.60 per year for foreign postage. Entered as second-class matter, April 1, 1908, at the post office at Washington, D. C., under act of March 3, 1879.

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Well, back to the mailbag and more interesting questions, folks have asked me about binoculars...

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Q. ***"What type of Binoculars do you suggest for Civilian Defense, Aircraft Spotting?"***

A. During daylight Bushnell 7x35 I.F. Featherlight Binocular is ideal. Its unusual lightness (17 oz.) makes its use over long periods of observation a pleasure rather than an ordeal. For nights, fog and unfavorable lighting conditions, Bushnell 7x50 I.F. Featherlight Binocular is recommended. If this latter model is used during extremely bright daylight it is suggested that special, variable-density, polarized filters be used. We can supply these.

Cleaning Binoculars

Q. ***"How can Binoculars best be cleaned?"***

A. Always blow the foreign matter, grit, etc. from lenses before wiping. Use lens tissue (available at all Optometrists, Photo Supply Stores, etc.) or a clean, previously washed, lint-free handkerchief. Wipe gently. To remove fingerprints, smears, etc., breathe on glass first. Never attempt to clean Binoculars internally or try to take them apart. Leave all other cleaning to experts.

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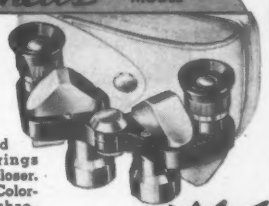

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IncidenTa/Ly

This issue sees the addition of a final name to the Dope Bag masthead (page 53), thus completing the RIFLEMAN's long-planned enlargement of its 'panel of experts'. The six men who now answer technical queries of Association members make up the finest group of 'name' gun writers ever assembled by any magazine.

The 'newcomer' to the Dope Bag masthead actually is well known to RIFLEMAN readers. Harold E. MacFarland made his first RIFLEMAN appearance in 1940, and has been an off-and-on contributor ever since. The autobiographical sketch he sent to us explains why his contributions have so far been on an 'off-and-on' basis:

"As far back as I can remember," says MacFarland, "I've been completely nuts about guns. (You have to be at least sort of nuts to be a gunsmith.) My folks were afraid of guns and I was forbidden to use them until I was fifteen. Of course, the repression built up a dangerous head of pressure that was bound to find an outlet and carry me to excesses. Once I escaped, I spent every loose dollar buying every American and foreign gun I could find, a few at a time. I kept them long enough to study the mechanism, then tinkered them up a bit and sold them, usually at a profit. I quickly added a gunsmithing department to my father's hardware store.

"This first shop was at St. Clairsville, Ohio. Later ones were at Huntington, West Virginia and Bloomingburg, Ohio. During this period the gunsmithing was only semi-professional, and pretty much of a spare-time job. I didn't make enough at it to permit regular eating and I was acquiring an education. I attended Ohio State University, made the acquaintance of the rifle team almost immediately, and got my first taste of target shooting. I remember asking the old coach, the late Captain Dave M. Beaird, what sort of score I was expected to make if I were to be considered for the team. "Wal", he said, " you see that little bullseye in the middle? You're supposed to keep 'em in there". Naively, I believed him, so I started practicing. Later, after I turned in the first four-position possible fired on that range, I found that he had been kidding me. With training gained under Beaird, I made the Ohio civilian team and fired at Camp Perry in 1924.

"In 1932 I found myself broke flatter than a flitter (whatever that is). My assets were a junk car, a few hand tools, and enough money for gasoline to get out of the country; so I packed the tools in the car, picked the wildest spot on the map, and started out. I landed deep in the northern Minnesota wilderness, ten miles from an Indian reservation and sixty miles from a city worthy of a name. After putting up a log cabin, I hung my sign on the trail past the house.

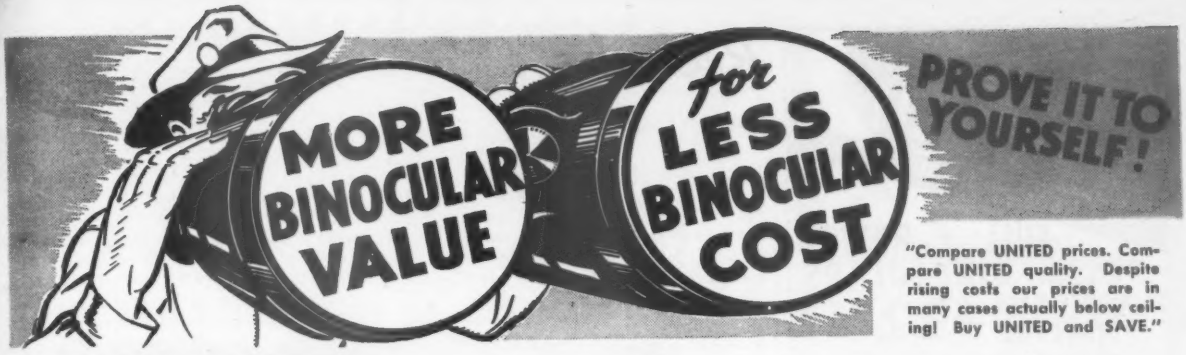
"By 1937, the white schoolmarm off the Indian Reservation had gotten to be a repeat customer in the shop so I married her and moved the shop up on the Canadian border to Loman, Minnesota. This union didn't hurt my business any because she was perfectly willing for me to buy guns and tools instead of dresses and living-room furniture.

"By 1950 I had grown tired of pushing snow with my chin and braving temperatures that would freeze the glandular appendages off a brass monkey so I boxed my tools and proceeded to build a new shop in Prescott, Arizona.

"I wrote my first magazine articles about 1929 for 'Hunter-Trader-Trapper'. First made the RIFLEMAN in 1940. And I wrote my book, "Gunsmithing Simplified," while sitting in a tent on Arizona's Tonto Rim, summer 1949."

That just about sums up the background of the newest addition to the RIFLEMAN's panel of experts. With MacFarland to specialize in gunsmithing inquiries, we have the strongest panel we've ever had . . . and one that should be able to answer any reasonable question that comes down the road.

JS



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7x35 COATED $45.50

Presenting a handsome, sturdy, all purpose 7 power binocular that will give you exceptionally sharp, brilliant images. Has individually focussing eye pieces. For sportsmen wanting long range viewing. Another opportunity to save by buying from UNITED. Genuine leather case and straps included.

6x30—$32.50

8x30—$36.50 COATED

10x30—$45.00 LIGHTWEIGHT

Three (3) superb achromatic glasses to choose from. Weigh only 16-18 ounces each, measure a compact 4½x6 inches. Only in power and price do they differ. Quality bargains in every sense of the words. With leather case and straps.

8x40 COATED $54.50

A full 8 power PLUS large 40 mm lenses! Lightweight. Compact. Moisture - dust proofed. Leather case, straps. SAME MODEL IN CENTER FOCUS with individually focussing right eye—$62.50. Leather case, straps.

COATED

8x40 — $54.50
10x50 — $62.00
12x50 — $65.00
16x50 — $69.50

Powerful, precision made glasses. Achromatic lens. Individual eye focussing. Superb glasses of quality construction.

Fine leather cases, straps.

MIKRON DE LUXE

6 POWER—COATED 10 LENS—4 PRISMS

The finest pocket size binocular on the market. Weigh only 4 ounces, are small as a package of cigarettes, yet are precision machined and optically perfect in every detail. Handsome velvet chrome finish with black trim. Represent "richness personified" in appearance, performance. Carry in vest pocket everywhere.

Leather case, straps, $36.95.

6 TELESCOPES IN ONE! (COATED OPTICS)

15 to 40 Power WOLLENSAK VARIABLE TELESCOPE. Instant focusing at all powers. 40mm objective. Chrome tubes. 27" long. See .22 bullet holes clearly at 300 feet. $29.50 tax included. Genuine Leather Case included.

UNCONDITIONALLY GUARANTEED

Every UNITED binocular sold with WRITTEN GUARANTEE CERTIFICATE! Return if not satified for full unquestioned refund.

AIR MAIL SERVICE

For same day shipment by AIRMAIL add to price 6 or 8 power $2.00; 7x, 10x, 12x, 16x, 20x $3.00; telescope $2.00.

LEATHER CASE AND STRAPS

Included at no extra cost at all above prices. On C. O. D.'s send $2.00 deposit. Add tax. Cash orders prepaid.

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UNITED BLDG., 9043 S. Western Ave. Dept. ARF-7709 Chicago 20, Ill.

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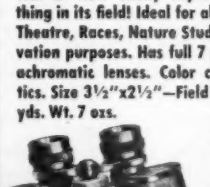
YOUR $ $ SAVING OPPORTUNITY
FULL 7 POWER PRISM BINOCULARS
MONEY BACK GUARANTEE $22.75*
We offer this guarantee to assure you of complete satisfaction We know that all our binoculars are made from the finest materials available and are manufactured to our specifications by expertly skilled technicians You will be proud to own a binocular carrying the FAR EASTERN Trade Mark FE Your assurance of perfection
New 7 POWER BINOCULAR
$22.75* WITH CASE AND STRAPS

7 X 18
Originally designed for secret agents of World War 2—Now vastly improved! Surpasses anything in its field! Ideal for all-round use: Hunting, Theatre, Races, Nature Study and General Observation purposes. Has full 7 power magnification, achromatic lenses. Color corrected, coated optics. Size 3½"x2½"—Field of view 375' at 1000 yds. Wt. 7 ozs.

8 x 30 mm. CENTER FOCUS
A Compact Powerful Precision Binocular Sharp Delineation, Perfect Alignment. True color rendition. Achromatic lenses. Coated optics. Has easy carry plush lined leather case and straps.
$36.00*
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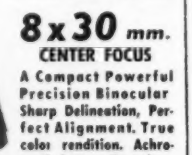
Miniature Model

So tiny it can easily be slipped into vest pocket or purse. Full 6 power coated prism binocular. Smart and modern design. Beautiful lustrous chrome finish. Color corrected achromatic lenses. Coated optics. Wt. 5 ozs. Size 2" x 3¼" Field of view: 370' at 1000 yds.
$17.50*
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Ricochets . . .

FREE-RIFLE TRIGGER

New York, N. Y.

Editor:

Didn't Art Jackson (RIFLEMAN, February) slip up in saying that "free rifle equipment may be used in . . . gallery tournaments"? I thought the smallbore rule book specifically barred the use of set triggers in .22-caliber matches.

JOHN MIZNER

• *Right. Rule 1-1 of the NRA Smallbore Rifle Rules specifically states that the trigger of a smallbore rifle "must not be capable of set trigger functioning." This wording allows use of any standard trigger which is adjusted to a pull of three pounds or more, but does not permit use of free rifles, which are equipped with set triggers.—Ed.*

CALL ME HOPPY

Detroit, Michigan

Editor:

In the January RIFLEMAN, Mr. Keith blandly states that the single-action Army was the best gun that the Colt people ever built. I wonder if Elmer ("Call Me Hoppy") . . . would prefer driving a Model-T Ford rather than one of the present day models? On second thought, he's probably still in love with his faithful old hoss, so what's the use!

JOSEPH E. VARGA

"SIXGUNS"

Belleville, Illinois

Editor:

A friend of mine handed me a copy of the January RIFLEMAN, in which I read the article "Sixguns" by Elmer Keith. I certainly enjoyed this.

I have always admired the Colt Frontier revolver, as I believe it to be synonymous with the old West, as well as having played a part in saving the precious freedoms that Americans all hold dear. With the old Colt Frontier goes the romance of the West.

JOHN R. MALCOLM

CLAW HAMMER

Trinidad, Colorado

Editor:

We realize that Mr. Keith is an expert hunter but he should stick to practical dope on hunting. In the opening paragraph of his "Sixguns," Mr. Keith wrote, "(the sixgun) was a tool and a mighty useful one at that." We admit that it was a useful tool—useful for driving staples into fence posts, shoeing horses, and for building dog houses, but the obsolete "sixgun" has given way here in the West to the modern claw hammer.

DAN J. MOUREY
ROBERT W. FARIZ
F. W. LOHNES
ARTHUR SCHLOPPICH JR.

"INADEQUATE"

Salmon, Idaho

Editor:

Either you or the printer's devil has unwittingly put me in hot water with my readers. On page 8 of the January RIFLEMAN you quote me (correctly) as believing that "nothing smaller than .33 caliber, nor less than a 250-grain bullet should ever be used on elk". Then, on pages 12-13, you have me saying, "I have killed three mule deer with the .32-20 low velocity . . . load, and the cartridge proved entirely adequate." When I sent you the manuscript, dammit, that word was INadequate!

Don't fail to publish this letter, so I can get out from under the stack of mail from outraged readers. I know that a lot of folks don't agree with my ideas of proper calibers for heavy game—but that statement that I recommend .32-20 pistol loads for mule deer . . . well, you can imagine what I've been called since the article appeared!

ELMER KEITH

• *RIFLEMAN readers can put the blame where it belongs by sending those nasty letters to the Ricochets Editor, 1600 Rhode Island Avenue, Washington 6, D. C. Elmer's manuscript, when received, read "inadequate".—Ed.*

ELK GUNS

Carbondale, Colorado

Editor:

Keep Elmer Keith on the job of promoting the use of bigger guns in big-game hunting, particularly for elk.

I am a U. S. Forest Ranger in elk territory in Colorado, and I know he is on the right track. I have found from personal observation of others and by hunting with a 30-'06 myself, that even that isn't enough for a large bull or any elk which is stirred-up, frightened, angry, or wounded. Even when shot with an '06 in a vital spot many an elk won't even flinch but just run off a way and then topple over dead in the next thicket.

I find many dead elk strewn around the forest every Spring when the snow melts, and most of them are in localities where the hunting parties were undergunned. Your Mr. Average Sportsman isn't capable of grouping five shots in a 16-inch circle at 100 yards under the stress and excitement of hunting, so he needs a gun that will knock 'em flat if it hits anywhere near a vital spot. In the second place, when he shoots at an elk which doesn't even flinch, all too often he figures that he scored a clean miss without even going over to check up on the situation. He goes on around the mountain to shoot another and finally does knock one flat, and comes back to town secure in the knowledge that old Betsy really kills 'em dead every time. He *doesn't* know about the three others that he left up there on the hill dead after they had gone from 200 yards to two miles.

We game managers of the western mountains spend a lot of time and energy for bigger and better game herds for Mr. Average Hunter to shoot at. We would like to see him bag his deer and elk and take it home with him. The wounded one is left to die and doesn't do anyone any good. If the hunter needs a better gun, let him take enough money out of the china pig and go buy one this week.

J. R. STEVENSON

CANNON-ITIS!

Oakland, California

Editor:

If Keith has not already done so he should read the book by Sir Samuel White Baker. There was a man after Keith's own heart. His light rifle was a .557 Express shooting

HEADQUARTERS for GUNMEN GUNSMITHS, SPORTSMEN – SHOOTERS

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Oxynate "7" was introduced to readers of "The Rifleman" over 10 years ago. It is now being used by more than 5,000 gunmen with ever increasing satisfaction. . . . As improvements are made they are included in Oxynate "7" making it always ahead of the times. Our book "Bluing and Polishing," price 35¢ post paid, is the most complete of its kind. Not only are full instructions given, but all shortcuts, cross-checks, etc., as used in other shops are clearly given. Users of Oxynate "7" not only have our technical resources at their disposal but also the findings of the best gunmen in the country.

EBONY—HORN

We have on order, for immediate delivery. Ebony in blocks measuring 2" x 2" x 2" @ $1.25; Black India Horn blocks in excess of 2" x 2" x 2" @ $1.50 each.

PLASTIC BLOCKS

Black Tenite Solid Blocks measuring 2" x 2" x 2". $1.40 each.

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Two pages of 10-X shooting coats and accessories in the New Mart. Prices, in all popular sizes, are—Imperial $15.00
Aristocrat, $14.00; 10-X gloves, $4.00; Junior coats, $10.00; Trap & Skeet Jackets—from $11.00 to $20.00.

SCOPE DRILLS & TAPS

6 X 48 Taps, taper, bottom or plug, Six asserted $2.00
8 X 40 Taps, taper, bottom or plug, Six asserted $2.10
#31 HiSpeed Drills, dozen ... 2.85
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6 X 48 Hardened, 4 asstd lengths, per 100 ..... $ 2.75
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KING SIGHTS

King open rear sights, flat top, semi-buckhorn, full buckhorn, each.. $2.50
King front sights, each 1.50
(sights on hand for all popular makes of guns)

LOW SCOPE SAFETIES

Low mounting safeties, Buehler, for Mauser, Springfield, Enfield & Krag. Anyone can install, each $6.00

TELESCOPE SIGHTS

Weaver K10	$ 59.50
Weaver K8	59.50
Weaver K6	48.50
Weaver KV	$57.00
Weaver K4	45.00
Weaver K2.5	37.50
Weaver K1	34.50
Weaver J4	27.50
Weaver J2.5	22.50
Weaver G8	12.50
Weaver G4	9.75
Stith Bear Cub 2½X	55.00
Stith B. C. Master 4X no adjustments	55.00
Stith B. C. Master double adjustments	85.00
Stith B. C. Master 6X no adjustments	70.00
Stith B. C. Master 6X double adjustments	100.00
Texan 2½X	55.00
Lyman Alaskan 2½X	60.00
Lyman Challenger 4X	85.00
Unerti Falcon 2¾X	48.00
Unerti Hawk 4X	52.00
Unerti Condor 6X	66.00
Leupold/Stevens	55.00
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Unerti 1¼"	78.00
Unerti 1½"	90.00
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SCOPE MOUNTS

Weaver QD top or side	9.75
Top mount rings	9.00
Weaver U mount	6.25
Weaver Q mount	5.75
Weaver N mount	2.00
Stith Master mount	25.00
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Genuine Plexiglass in sheets 6" X 12" only, in colors Red, Opaque White, Green, Black, Clear.
Sheet 1/8" thick, each $1.00
Sheet 1/16" thick, each 0.80
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INLETTING RASPS

Denman bedding rasp, cutter sizes ½"—0/16"—⅝"—¾", complete with one cutter $4.50 extra cutters, each $1.65
Schmidt inletting rasp, the ever popular inletting tool. Cutter sizes, ⅝"—¾"—⅞". Schmidt rasp complete with two cutters $3.50
Extra cutter 1.60
The Grobet Barrel Rasp . . . For over 200 years the standby in the stockmaking industry . . . a true rasp. Rasp sizes ½" or ¾". Price, complete with one rasp $3.25
Extra rasp 2.85

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Mashburn ¼ pint finish $1.00
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Master Finish, ¼ pint 1.00
Master Finish, Quart 5.00
Birchwood, 4 oz. bottle 1.50
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6/0 Garnet paper, 10 sheets... 0.90
6/0 Garnet paper, 10 sheets 0.90
Genuine Stockmakers Shellac Sticks, Gunshop assortment 12 sticks 3.00

METAL BLACKENING KIT

Complete metal Blackening kit. Contains chemicals for Blackening Aluminum, brass, silver solder, lead solder, nickel, copper. An absolute "must" for the gun worker—professional or hobby. Handy Andy Kit, each $6.00 (a $7.05 value).

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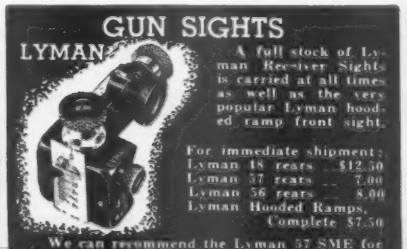
Regardless of what kind of metal work you are doing (and some kinds of wood work) you will find a greaseless Polish-O-Ray your buffing and polishing daily companion. Used exclusively in shops the world over. Available in 2 pound tubes in grits #140; 240; 400; 500.
Price, per #2 tube $1.00
(be sure and spec. grit number)

HOW TO ORDER

Brownell's will ship C.O.D. to N.R.A. members with the exception of guns. You save money by forwarding payment with order. Be sure and include enough for postage. Over payments will be refunded. Orders that do not have sufficient postage will be shipped EXPRESS COLLECT. All prices shown are subject to immediate change without notice.

A full stock of the ever popular Lyman No. 310 tool in all popular calibers is carried on hand at all times. Priced at $11.50 you pay for it in savings the first time used. The Lyman Tru-Line Jr. is available for the more serious or professional loader. Tru-Line Jr. complete with one set of dies at only $22.00.



A full stock of Lyman Receiver Sights is carried at all times as well as the very popular Lyman hooded ramp front sight.

For immediate shipment:
Lyman 48 rears ... $12.50
Lyman 57 rears ... 7.00
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Lyman Hooded Ramps, Complete $7.50

We can recommend the Lyman 57 SME for the average gunsmith at $7.00 retail—it fits Springfield, Enfield, or Mauser. A good sight at a good price.

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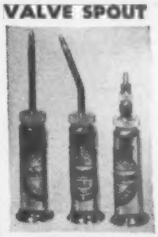
The solder with everything in the bottle—no extra flux, wires, ribbons, etc., necessary. Spread it on, clamp, heat to temperature. One ounce jar Ls. Flo $4 1040 silver braze, $2.00 2 oz. jar H-Power T-500 (melts at 500) per jar $0.75.

VALVE SPOUT



OIL CANS

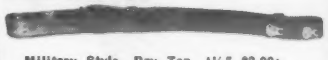
WILL DROP A DRIP OR SQUIRT A ROD

The slickest thing for gunmen or fishermen that's ever been developed for getting oil where you want it when you want it. Top grade material throughout. Each, $1.00 post paid. Specify spout wanted.

GUNMAN'S MART

Here it is, the book written up in The Rifleman this last January. Has everything in it General Hatcher mentioned and more . . . while the current printing lasts the price is $1.25 postpaid. Next printing will be higher.

GUN SLINGS



Military Style, Dry Tan, 1¼" $2.90; 1" $2.60; ⅞" $2.60
(Oil Tan 10¢ higher, each)
Whalen Style, Dry Tan, 1¼" $2.90; 1" $2.60; ⅞" 2.60
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(Oil Tan 10¢ higher)

STOCK FINISH

With guns getting scarcer and more stocks being made—and old ones getting better care, fast, good stock finishing is a problem. "Professional Finish" at $2.00 a kit has proven popular and fast. More finishes shown at left.

STOCKMAKERS CHISELS

Denman Stockmaker's hand forged chisels. Superior to any, bar none. Full set of eight tools, ppd. $18.50
Individual chisels, each 2.50

The .22 with the SHORT SLIDE ACTION

Savage Model 29
Slide Action .22 Cal. Rifle

Here's one of the most popular "22" rifles ever built — the Savage Model 29 slide action repeater. The short forearm stroke (slide travels only 1½" in loading and ejecting) permits rapid fire shooting without disturbing aim.

But, that's only one of the many features you'll find in this rifle. Its 15-shot tubular magazine permits continuous firing at any desired speed . . . knobbed assembly screw allows quick take-down . . . one-piece bolt removable without tools for cleaning . . . extra long knurled forearm adaptable to the reach of any shooter . . . stock of American walnut . . . in all, one of the finest hammerless, slide action .22 rifles you can buy.

But, "seeing is believing," so see the accurate, dependable Savage "29" at your dealer's and check its features for yourself. *Write for free catalog* of Savage, Stevens and Fox shotguns and rifles.

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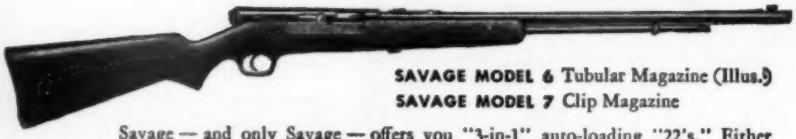

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Savage — and only Savage — offers you "3-in-1" auto-loading "22's." Either model instantly adjustable as auto-loader, using .22 long rifle cartridges; or as bolt action or single shot, shooting .22 long rifle, .22 long or .22 short rifle cartridges.

a 750-grain bullet driven by 7 drachms of black powder. His medium gun was an 8-bore Express burning 11 drachms of black powder and shooting a 2-ounce bullet. For elephants he used the rifle he called "Babe", a 4-bore burning 17 drachms of black powder and shooting a *half-pound* explosive shell.

ALFRED K. FRIEDRICH

PRIMER SHORTAGE

Philadelphia, Pa.

Editor:

Can you not do something about the shortage of primers?

One of the main duties of the association and the magazine is to keep a man's guns without their being hogtied. Today it is almost impossible to purchase primers. The boys in the know bought the market dry, and now the little shooters like myself must hang up their guns and watch the smart ones have the time of their lives.

With the great productive facilities of the ammunition makers they could make a few days run and this would take care of shooters for a couple of years.

People "who know" proclaim that war is not for this year or more; all of which looks like another way of taking our guns away from us.

I am sure a word from you to the ammunition companies would do more in getting them to make a few primers than from any other source.

ROBERT KOLSBUN

G. FOR JERRY

Beverly Hills, California

Editor:

In the January issue you ran a letter in which some gent named J. Knight from North Hollywood cussed out the magazine. Me, I live in North Hollywood all right, but I am G. Knight, even if my nickname is Jerry. I spend my days in Kerr's sporting goods emporium in Beverly Hills, surrounded by great quantities of beautiful guns (advertisement!), and since you ran that letter an endless procession of fiery-eyed guys have been standing in line here to beat me like a carpet for maligning the RIFLEMAN.

I didn't do it! I like the RIFLEMAN! I think all of your staff looks like a combination of Lana Turner and Errol Flynn. Please call off the Gestapo!

Despondently,
GERALD KNIGHT

. . . WITH GRAVY

New York, N. Y.

Editor:

How can I qualify for a position with the National Pork Service (January, page 22)? I've worked for a living long enough. That's for me, brother!

JERRY SENTELLA

CONGRATULATIONS

Brookline, Massachusetts

Editor:

Like all other members, I look forward to the arrival of the RIFLEMAN each month, even though reading the ads makes me wish I were a millionaire. You are to be congratulated for the wonderful job you are doing for shooters, especially in the never-ending fight against the anti-gun crowd.

HENRY SELIB

● *Thanks . . . and for those who feel the same way, there's an NRA membership application ready for mailing on page 95.—Ed.*

6 POWER PRISM BINOCULARS

gives you

JUST RECEIVED!
7 Power POCKET SIZE prism binoculars that weigh only 7 oz! *COATED!* Precision made of lightweight metal. Chrome and black trim. Achromatic lens. Individual eye focussing. With case and straps only $24.95. Similar to illustration.

READ WHAT EXPERTS SAY

Lt. Col. Charles Askins, Firearms Editor of Hardware World writes us, "I experimented rather extensively with your binoculars, used them a great deal in the dense woods during the late evening and early in the morning. They are really A-1."

"AMERICAN RIFLEMAN" SAYS

"Recently we have been testing a 6 POWER BINOCULAR sold for $19.50 plus tax by UNITED, Chicago. Neat, attractive, stoutly made, gives good clear image and a good glass for the money . . . etc."

"TRUE" MAGAZINE SAYS

"For cost, performance and compactness we find these 6 Power prism binoculars good for every general purpose."

"AMERICAN LEGION" SAYS

"Now you can get close-up views of sports events, wild life, etc. Thanks to radically different design, etc., offered by UNITED, Chicago."

- INSTANT FINGER TIP ADJUSTMENT
- COMBINE POWER, RANGE, WEIGHT
- POCKET SIZE COMPACTNESS
- QUALITY CONSTRUCTION, PERFORMANCE

COATED for brighter, clearer images. A quality binocular in every way economy priced. They bear the UNITED "seal of approval" because they are all metal construction, scientifically ground lens. 3 inches long! Weight 4 ounces! A full 6 power prism binocular! Have achromatic lens. Field of view of 375 feet at 1,000 yards.

UNCONDITIONAL GUARANTEE CERTIFICATE

Sent with every pair sold. Compare favorably with many glasses retailing for several times our low asking price of $19.50 plus Federal Tax. Price includes genuine leather carrying case and straps.

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UNITED BUILDING
Dept. ARF-7609
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UNITED BINOCULAR CO., Dept. ARF-7609
9043 S. Western Ave., Chicago 20, Ill.

Please rush Pocket Binocular Checked
- ☐ Ship ppd. 7x $24.95 plus 20% tax
- ☐ Ship ppd. 6x $19.50 plus 20% tax
- ☐ Ship C.O.D. $2.00 deposit enclosed
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First Things First

Americans are a sentimental, blow-hot blow-cold people who, in their national thinking and national policies, constantly swing from one extreme to another under the influence of suave orators and propagandists. First we tell the world that we are secure in our own strength, and want no part of the Old World and its endless bickerings over power politics; then we decide that we cannot exist without the Old World and we become the very center of the fight over power politics. This is not to say that either extreme is the right one—but merely to point out historical fact and to indicate that the American seemingly never seeks a reasonable, logically thought-out *middle* course. We must eternally go all out in one direction or another so that we thoughtlessly and enthusiastically squander our natural resources, our manpower, even our basic freedoms.

This national inability to stop, look and listen was strikingly evident after World War II, when having at tremendous cost assumed the position of the world's leading power—morally, militarily and economically—we succumbed to the carefully planted and skillfully nurtured communist propaganda which resulted in the complete disbanding of the world's greatest armed force dedicated to peace and human rights, sinking in the oceans and abandoning within easy reach of the communist armies and fifth columns ordnance and military material into which had gone some of our last remaining natural resources. It mattered not that we had no homes for our returning warriors nor jobs for them to go to. We wanted 'our boys' home! Immediately the crime rate increased and, due to poor housing and lack of jobs, the communist party in the United States reached its greatest strength of all time, dominating many key labor unions in those fields where fifth columnists can do the greatest damage in a national emergency. *Then* we became nationally perturbed about communist infiltration into labor unions and government. We were much upset about the increase in crime. We demanded more laws of one kind and another—all of which decreased the rights of the individual and increased the rights of the state so that there became less and less upon which to base a choice between the communist 'dictatorship of the proletariat' and the American 'dictatorship of the bureaucrat'.

Now the same kind of thing is happening with regard to drafting men for service in the armed forces. The great question is: Shall we draft 18-year-olds or wait until they are 18½ years old? Certainly there is no family which *wants* to see its sons called into the armed forces at 18, 18½, 19 or any other age! Can't we be sensible for once in our national lives? Can't we discard sentimentality and look the facts squarely in the face? The *fundamental* question is this: Are we willing to accept the position of the world's greatest power, morally, politically and economically? If so, how big a military and naval establishment do we *need*?

Assuming that we *do* require armed forces of a size making it necessary to draft either 18-year-olds who have not yet gotten a job *or* older men who have begun to establish themselves in the business world, what are the cold facts? Some people say it would be morally wrong to take these teen-age lads away from the influence of their homes and to place them under the influence of the officers and non-coms of the armed forces. Before taking this argument too seriously we must consider the thousands of reputable, successful, American business and professional men of this generation who voluntarily went into the armed forces when they were eighteen or younger during World War I. Most of these men will tell you that their experience was invaluable and that they lost nothing morally as a result of it. Nor can we overlook the fact that during the first six months of 1950 over 14,000 boys under the age of eighteen were arrested and charged with crimes ranging from vagrancy to murder. It seems pertinent to ask if these lads would not have been better off under the supervision and discipline of the armed forces than under the much-discussed 'home influences'.

Others object to the eighteen-year-old draft on the grounds that it breaks into a youngster's education. Probably everyone will agree that the boys should be permitted to finish high school. But all college educators agree that the ex-GI from World War II made the best college student that professors have ever worked with. These men knew what they wanted. They had learned discipline and how to work and, for many of them, finishing a normal four-year course in three years proved a comparatively easy task. Perhaps this fact lay behind the January action of the American Association of Colleges and the American Council on Education in reversing a position of several years standing in order to go on record as favoring universal military training.

C. B. Lister

COL. BERDAN AND "CALIFORNIA JOE."

Hiram Berdan

CHIEF OF THE SHARPSHOOTERS

The use of trained riflemen in warfare is an institution dating back to the beginnings of this country. No group better exemplifies this tradition of skill with the rifle than do these legendary sharpshooters

BY MAJOR LYMAN L. WOODMAN, USAF

NO STRANGER to the fine art of riflery himself, Abraham Lincoln was nevertheless greatly impressed by the firing demonstration given him by the U. S. Sharpshooters at their range near the Capitol one autumn day in 1861. That visit of the President to the huge Army Camp of Instruction also resulted in considerable advantage to the cause of improved military marksmanship for which Colonel Hiram Berdan, the Sharpshooters' leader, had struggled vainly for months.

Mr. Lincoln and General McClellan, commanding the defenses of Washington, were invited by Colonel Berdan to the rifle range where shooting was going on. This spot was a point of interest to the many visitors from all over the world who came to watch Union soldiers in training.

One hundred of Berdan's men, using their own heavy muzzle-loading target guns, fired from a rifle pit at a man-size target 600 yards away. Every shot was a hit. Then the President, "handling the rifle like a veteran", fired three shots from a rifle belonging to a man of Company F. Once, resting the gun on a sapling as he took sight, he called out to the great delight of the many soldiers and civilians present, "Boys, this reminds me of old-time shooting."

Then there occurred the episode which resulted later in so much advantage to the corps of riflemen. Present in Lincoln's group was Assistant Secretary of War Thomas Scott. This man was generally antagonistic toward Berdan, and was one of several influential persons opposed to the colonel's plea that modern breechloading rifles be provided for the men who lacked target guns. Berdan wanted the lighter, faster-loading arms for skirmishing and picket duty. Apparently intending to discredit Berdan and his training efforts, Scott asked the 37-year-old rifleman what he knew about guns and war that he should set his opinion concerning equipment against that of certain high officials. Scott challenged Colonel Berdan to prove his ability, thinking that

Famed American artist Winslow Homer sketched this sharpshooter for a November 1862 issue of "Harper's Weekly"

the latter would certainly decline or perhaps make a bad showing at a critical moment. The challenge was accepted; a painted figure of a man—labelled "Jeff Davis"—was set up and Berdan borrowed the sergeant-major's target rifle, which he knew to be correctly sighted for the distance.

Thomas Scott then remarked, "Now you must fire standing, for officers should not dirty their uniforms by getting into rifle pits." Berdan, saying that he always fired from the shoulder, stepped forward and started to bring the heavy piece into position.

"What point are you going to fire at?" called out the Assistant Secretary.

"The head", answered Berdan.

"Fire at the right eye!" was Scott's next order.

As Berdan described it later, "I was then taking aim and made no reply, and it is hardly necessary for me to say that at that distance—600 yards—I did not try for the eye but did shoot to strike the head. The target was brought in, and as good luck would have it, I had cut out the pupil of the right eye. No man knew better than President Lincoln how to turn what he knew to be an accident to good account. He began to laugh, and he kept on laughing until he got into his carriage, and then said, 'Colonel, come down to-morrow and I will give you the order for the breechloaders."

Thus, the .52 caliber Sharps breechloader became the principal arm of the U. S. Sharpshooters. The name of Berdan's regiment, incidentally, had already been established by him in June 1861 when he proposed the organization of these specialists; it was not related to the make of the rifles they used.

During a prize match held after President Lincoln departed, Capt. Edward Drew from Wisconsin fired four shots into a 10-inch circle at 220 yards, using a position described as "somewhat novel, if not actually original." The captain lay on his back with his feet toward the target, rested the rifle muzzle on the toes of his boots, and raised his head to sight down the barrel. This position became quite popular years later when the Creedmoor Range was established.

Berdan's administration in camp and leadership on the field of battle belied the fact that he lacked previous military training. He was an inventor from Phelps, New York. His father was a stockman and owner of considerable land near Rochester.

A young wizard in mechanics and clever in the construction of ingenious devices, Hiram Berdan, at 20 years, had roughed out the idea which led to the invention of a reaping

machine. Just before the war he patented a "mechanical bakery" which was put into operation in five cities; it was said that the bakers' union put a halt to its further use. After the Civil War, Berdan turned his inventiveness to firearms and machines of war, of which more will be said later.

An excellent rifle shot himself by hobby, Berdan reasoned that a large force of specially-trained "sharp shots" could cause the Confederate lines a lot of woe from a long distance. He was sure of the effectiveness of what we now call "sniping", and he was able to convince the Secretary of War of his idea, with the result that he was commissioned a colonel of volunteers and authorized to recruit a regiment of soldiers to serve as sharpshooters.

Berdan was allowed to set up his own specifications for the type of men he wanted and the uniform and equipment they should use. Men accepted into his unique corps could bring their own rifles and use them in the service if their caliber was standard. If the arms passed Berdan's examination and were accepted for use in lieu of issue rifles, the owners were paid $60 for them. The Sharpshooter's field uniform consisted of a dark green coat and trousers to match, leather leggings, and a cap with a black plume.

Each of the hundreds of men who sought to serve as officers and soldiers with the New York inventor-rifleman had to pass a proficiency test. This consisted of firing 10 consecutive shots at a target set up 200 yards away, with the average distance between the bullet hole and the center of the bullseye not exceeding five inches. In other words, the string measurement of all 10 shots could not be more than 50 inches. A Wisconsin man kept his total string measurement within 4 inches; at some of the test ranges, 2 inches to a shot was a frequent occurrence. In several 600-yard firing demonstrations in which he used a telescope-sighted rifle, Colonel Berdan was able to keep five consecutive shots within the 10-inch bull.

A common complaint of the day was that the cross-wires in the telescopes trembled very easily, making it difficult to get steady aim in the offhand position. However, the muzzleloader target rifles with their telescope or globe sights, were very heavy—from 15 to 30 pounds—and they were nearly always fired from a rest, and with excellent results.

The Adjutants General of the loyal states posted announcements calling for sharpshooter volunteers, gave the firing tests on neighborhood ranges, and sent the accepted men to the rendezvous of the new regiment at Weehawken, N. J. The number of skilled men responding was greater than expected, and two regiments were organized and moved to the Camp of Instruction in the environs of Washington late in September 1861. This was where drill, guard duty, skirmishing, camp duties, rifle practice, and patrolling were taught, and where citizens were moulded into soldiers.

Colonel Berdan, the nominal leader of all the Sharpshooters, was technically the commander of the 1st Regiment, while the 2nd Regiment was commanded by a Col. H. A. V. Post. The immediate staffs of both leaders included several men with valuable military background and experience in the Mexican War and in Europe.

In Berdan's regiment were four companies of New York men; three from Michigan; and one company each from the States of New Hampshire, Vermont, and Wisconsin. Colonel Post's 2nd Regiment contained eight companies representing New Hampshire (two), Vermont (two), and Maine, Pennsylvania, Michigan and Minnesota.

In March of 1862 the Sharpshooters went into the field, the 1st Regiment heading for Hampton, Virginia, and the 2nd Regiment marching toward Fredericksburg. They joined later, and fought most of the war under the same corps commander.

In each regiment, two companies were armed with muzzleloading target rifles, and the others, at the start, had Colt five-shot revolving rifles, the Sharps rifles having failed to show up prior to the troops' departure from Washington. The Colts, being much lighter than the target rifles, were well suited for skirmishing. At first the men were skittish about the Colt's inclination for discharging all five chambers at once when the gun was heated from much use, but as time went on this rifle became more esteemed. It never approached the level of appreciation held by the breechloader Sharps which were issued in their stead in May and June 1862. At that time, other army units were turning in smoothbore muskets and drawing the new standard Springfield muzzleloading rifles.

The Sharpshooters participated with the Army of the Potomac in more than 60 engagements during the war, including (before Berdan was disabled) the battle and siege of Yorktown, Virginia, and the battles of Antietam, Chancellorsville, and Gettysburg.

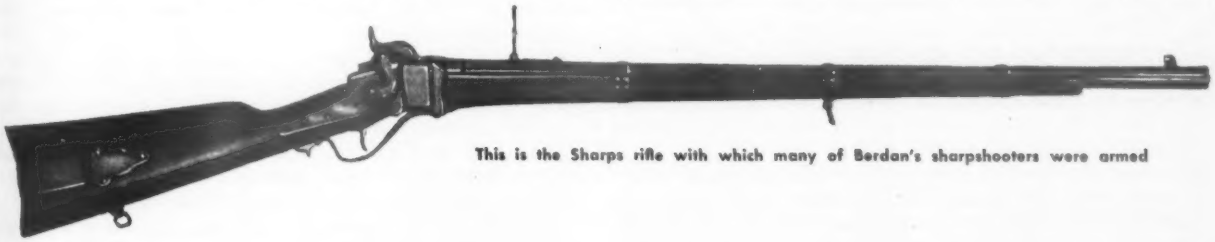
In practically every major action, the Sharpshooters were utilized in the lead position, serving as scouts and skirmishers, clearing the way for other troops to follow.

Berdan's men had a 30-mile hike on their first regimental jaunt against the enemy, and most of the movement was through dense woods, in thickets, across plowed fields and wet meadows, fording streams, and scaling fences. The outfit was eager, however; so much so that at one point—Berdan's group having outdistanced the main column too many times—an officer of General Morell's staff rode after them "to enquire whether the Sharpshooters intend to go on alone or would they prefer to wait for support?"

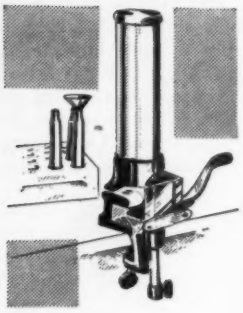
Members of both Sharpshooter regiments were commended on numerous occasions for their aggressiveness, bravery under fire, and obedience to instructions. They specialized in routing out the Confederate pickets, interfering with their patrols, giving counter-fire to the rebel skirmishers, and making the Southern cannon ineffective by picking off members of the gun crews.

The latter service was outstandingly rendered at Yorktown, where Berdan's men, leading the advance, knocked out many enemy cannon. Here, in their first major action, the Sharpshooters were under fire steadily for ten hours. Their good work was commented upon by Brigadier General Fitz John Porter, to whose brigade the Sharpshooters (always serving as an independent force) were attached.

"I am glad to learn from the admission of the enemy themselves", said General Porter to Berdan, "that they begin to fear your Sharpshooters. Your men have caused a number of rebels to bite the dust. I am glad to find your corps are proving themselves so efficient, *(Continued on page 37)*



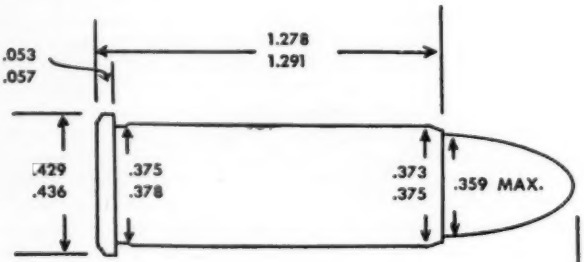
This is the Sharps rifle with which many of Berdan's sharpshooters were armed



.357 MAGNUM LOADS

This article on .357 Magnum loads is another in an important RIFLEMAN *series covering popular rifle and pistol cartridges.*

Preparation of the material for the article was handled jointly by the NRA's Al Barr and the H. P. White Company of Cleveland, Ohio (see RIFLEMAN, *November 1948, page 21). The velocity and pressure tests were made in the H. P. White Company laboratories. Ten of each of the loads listed in Tables 1 and 2 (with the exception of the Thompson gas-check bullet loads, only five of which were used), with powder charges measured carefully and bullets weighed to within plus-or-minus .15 grain, were checked for average velocity figures at 20 feet with an electronic counter chronograph. The loads were tested for pressure in an 8¾-inch S&W pressure barrel of .346-inch land diameter and .356-inch groove diameter, with a twist of one turn in 18¾ inches. Room temperature was maintained at 74 degrees F.*



The measurements shown in the drawing of the .357 Magnum cartridge are averages of measurements taken from ten different factory cartridges

THE .357 MAGNUM CARTRIDGE, so called because the bullet diameter is .357 inch, is one of the few cartridges in which nominal and actual measurements are the same. It is definitely a high-powered cartridge, pressure of it running only slightly less than that of high-powered rifle cartridges. Except for the Mars or Gabbet-Fairfax ammunition which enjoyed some popularity in England a few years back, the .357 Magnum cartridge is the most powerful pistol or revolver ammunition ever manufactured.

The modern .357 Magnum round is the product of the attempt by Major Douglas B. Wesson, of Smith & Wesson, and Philip B. Sharpe to develop a suitable high-velocity hunting cartridge for revolvers. Early experimentation was done with the Smith & Wesson .38-44 Outdoorsman Model revolver, which Sharpe and Wesson found would stand considerably more pressure than the average revolver. From the .38-44 frame Major Wesson evolved the .357 Magnum gun, which, with ammunition developed for it by Winchester, was introduced to the public in 1935.

The case length of the .357 Magnum round is approximately one-tenth longer than the .38 Smith & Wesson Special. It was made so intentionally to prevent the use of the high-power cartridge in guns designed for the .38 Special cartridge, which are not suited for the high pressures developed by the Magnum round. However, it must be noted that the .38 Special round will fit in the .357 Magnum chamber. Continued firing of the shorter round will eventually, of course, produce erosion in the forward end of the chamber, so that when the longer .357 rounds are used again, there may be some difficulty in extraction.

The .357 Magnum is popular with law enforcement officers because of its ability to penetrate light steel. It has been used very successfully at extreme ranges for hunting, also. For a time the Colt Manufacturing Company chambered their larger guns for the .357 Magnum, as well as for the usual lower velocity cartridges.

While the powerful .357 Magnum handgun cartridge is intended largely for defense purposes and for hunting with the handgun, even the mildest .38 Special loads in regular .38 Special cases can be used in the .357 revolver for target work, making one revolver suitable for varied purposes. The difference in case length is .185 inch; the .38 Special case is 1.15 inch long, and the .357 Magnum is 1.29 inch long, which means that a bullet from a .38 Special case must jump to reach the bullet diameter section of the cylinder forward of the cartridge case and then pass from the cylinder to the barrel. While the condition might be expected to have an adverse effect on accuracy, it is not always true that it does. Some accurate, mild combinations in the shorter cases have been developed and, in fact, any of the loads which have been recommended for the .38 Special (RIFLEMAN, February 1951, page 22) may be used in these cases in the Magnum revolver with usually as good results as are obtained by using them in the .38 Special.

There are two tables of loads listing pressure and velocity: Table 1 gives normal or moderate working loads for the .357 Magnum, and Table 2 lists the high-pressure, high-velocity loads. The moderate loads in Table 1 have all proven accurate and fully as powerful as the heaviest .38 Special loads which can be used normally in heavy duty revolvers. For even milder loads, those .38 given in the RIFLEMAN (February) may be used in the .357 Magnum for target purposes, even the same bullets may be sized to the same diameter and used. Since the powerful loads in Table 2 are intended for specific purposes, they are rather unpleasant to shoot and shouldn't be used normally as a regular diet for plinking and general shooting. When using very powerful loads, bullet diameter should not be much over groove diameter.

One of the main problems confronted by those who use the Magnum, especially with heavy loads nearly the equiv-

alent of commercial ammunition, is the problem of leading. Using a good bullet lubricant with a properly designed bullet in handloads usually causes less leading than is noted with factory ammunition. Ipco lubricant by Industrial Products Company, Box 14, Wakefield, Massachusetts, the Ideal lubricant, and others have proven satisfactory. A new one which has been tested and endorsed by many handloaders is a development of Cooper-Woodward, P. O. Box 972, Riverside, California. Some years ago when experimenting with the Magnum cartridge in the handgun and in a specially built rifle, we found that leading was cut down sometimes, and that quite heavy loads could be used, with a bullet diameter of .356 inch in a barrel of the same groove diameter. Bullets sized to .357 inch or a maximum of .358 inch can be used also, though leading depends somewhat on the individual gun. During the numerous tests with the Magnum cartridge in the handgun and rifle we found equal parts of beeswax, paraffin, and any good grade of heavy grease to be an excellent lubricant. One heavy grease in particular, very good for such use but sometimes hard to get, is Penzoil No. 305, containing some graphite.

In handloading for the .357 S&W Magnum, it is vitally important to maintain uniformly heavy crimp, especially with full-power loads. Crimp must be heavy enough to hold the bullet in place in the case mouth, or heavy recoil will cause the bullets to move forward, thus changing seating depth and jamming the gun if a bullet moves forward enough to prevent the cylinder from turning. All bullets normally used in the Magnum revolver are provided with regular crimping grooves.

Often handloaders request data for heavy loads which use fast-burning powders such as Bullseye, Pistol Powder No. 6, or the old No. 5, now replaced by No. 5066. A brief comparison of loads 1, 2, 3, and 4 in Table 2 with other loads in the same table shows why fast-burning powders are not recommended for heavier loads. Pressure is quite high in the first four loads, yet the velocity figures are lower than those for other loads in the table. The ratio of velocity to pressure is much better with Hercules Unique, Sharpshooter, or Hercules 2400.

For intermediate loads Hercules Unique is, no doubt, the best powder, as shown by loads 8 and 9 in Table 1. In Table 2, loads 5 and 6 with Unique powder show fairly high velocity at a reasonable pressure figure. No. 2400 will not burn uniformly in mild or so-called intermediate loads. Hercules Sharpshooter seems to perform quite well in the Magnum case, although it isn't so satisfactory in the .38 Special; it is another powder which gives uniform performance in heavier loads. Lighter loads of Sharpshooter left unburned powder in front of the muzzle of the gun during the pressure and velocity test. The same phenomenon results in using less than about 14 grains of Hercules 2400 in the Magnum revolver. The condition has never been noticed while using Hercules Unique in any load which develops around 20,000 pounds or higher pressure. Excellent accuracy has been obtained with Unique, a powder which should not be overlooked in handloading for the Magnum.

The so-called semiwadcutter bullet seems to perform best with heavier loads in the Magnum cartridge. Undoubtedly accurate, the bullet in hollow-point form is quite destructive loaded to near maximum in a cartridge. Naturally for the heavier loads pressure runs very high, as in commercial ammunition used in load 13 of Table 1 and load 16 of Table 2. No handloads in Table 2 gave as high velocity, nor as high pressure either, indicating that those who want the top may increase most of the handloads experimentally to get somewhat higher velocity and remain within recommended pressure limits.

There is actually only one handgun made specifically for the Magnum cartridge and that is, of course, the S&W Magnum. The S&W Magnum revolver will handle the heaviest handloads or commercial ammunition safely for longer periods of time without shooting loose than any other revolver available. It takes a good handgun to handle loads, the pressure of which may go as high as 48,000 pounds, though the cartridge has a working pressure of around 45,000 pounds maximum.

With high pressure and plain-base bullets there is good reason for the unwanted leading condition which results from using heavy loads in the Magnum revolver. For that reason, a gas-check bullet has been developed. The same one used for heavy loads in the .38 Special, it is known as the Thompson 358156 gas check designed by Ray C. Thompson, Box 216, Grand Marias, Minnesota. Thousands of these bullets have been fired through Magnum revolvers with heavy loads without leading conditions being nearly as bothersome as they are with plain-base bullets. Furthermore, it would seem that for equivalent velocity and pressure an increase in powder charge with the gas-check bullet over that used with the plain base is possible. A reasonable comparison may be noted in loads 12, 13, and 14 in Table 2. Even with a slightly heavier bullet and a slightly greater seating depth, the gas-check bullet used in load 12, with one-half grain more powder than used with the other bullets, didn't show any more pressure but nearly as much velocity. When getting up into extremely powerful loads in a handgun cartridge, an additional one-half grain powder can make a noticeable difference in pressure. The same condition held true with gas-check bullets in .38 Special caliber—that *(Continued on page 47)*

Table 1: Pressure and Velocity for Moderate .357 S&W Magnum Loads

Load	Weight (grains)	Bullet Type	Bullet Diameter (inch)	Seating Depth (inch)	Powder Charge (grains)	Powder Type	Lot No.	Primer	Case Make	Velocity	Extreme Variation	Pressure	Remarks
1	148	Ideal 358395	.358	.50	3.0	Bullseye	...	We. 1½	West.	890	62	.....	Target load
2	146	H&G 50 Wadcutter	.358	.475	4.0	Bullseye	...	We. 1½	West.	1084	23	22,990	Target load
3	146	H&G 50 Wadcutter	.358	.475	4.0	No. 6	9C	We. 1½	West.	1083	21	.....	Target load
4	161	Thompson 358156 GC	.357	385	3.8	No. 6	...	WRA 111	WRA	1025	27	19,820	Accurate
5	148	Ideal 358395 Wadcutter	.358	.500	4.0	5066	3	WRA 111	WRA	1001	45	.....	Target load
6	161	Thompson 358156 GC	.357	.385	5.3	5066	...	WRA 111	WRA	1092	41	23,540	Good load
7	161	Thompson 358156 GC	.357	.385	5.0	Red Dot	...	WRA 111	WRA	1045	57	20,960	Target load
8	155	Ideal-Keith 358439	.358	.375	6.5	Unique	...	We. 1½	West.	1290	32	23,000	Accurate
9	153	Thompson GC HP	.357	.385	7.0	Unique	...	WRA 111	WRA	1297	29	22,700	Accurate
10	85	Cramer 9-358 Zinc Alloy	.358	.300	8.5	Unique	...	We. 1½	West.	1789	29	24,990	Small game
11	162	Bond-Ness 358755	.358	.400	12.0	4759	2C	We. 1½	West.	1276	21	19,980	Good load
12	153	Thompson GC HP	.357	.385	13.0	4759	...	WRA 111	WRA	1315	26	22,220	Very accurate
13	158	Commercial load	....	....	....	.....	...	.....	.....	1643	48	43,480	.....

BIG-GAME ANIM

If any one comment that can be m unting
true, it is prob the
big-game animals is comple edicta

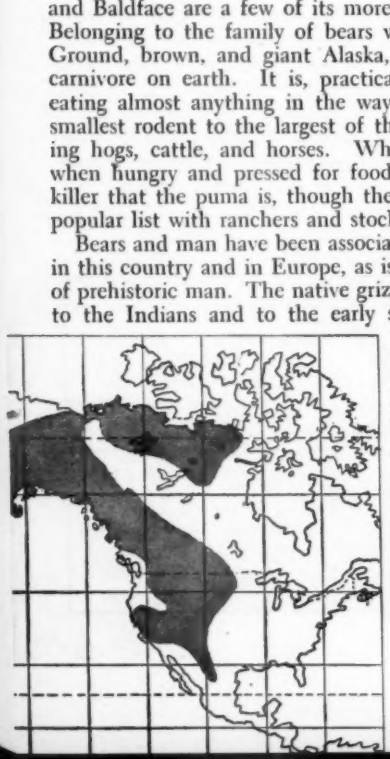
U.S. Fish & Wildlife Service

the grizzly bea

By JOHN MOYER, Staff Associate
Chicago Natural History Museum

THE KING OF BIG-GAME animals is considered by many to be the grizzly bear. The grizzly bear (*Ursus horribilis*) is also known by several other names: Silvertip, Roachback, and Baldface are a few of its more familiar common names. Belonging to the family of bears which takes in the Barren Ground, brown, and giant Alaska, the grizzly is the largest carnivore on earth. It is, practically speaking, omnivorous, eating almost anything in the way of animal life, from the smallest rodent to the largest of the hoofed animals, including hogs, cattle, and horses. While it often kills livestock when hungry and pressed for food, it is not the marauding killer that the puma is, though the grizzly is still on the unpopular list with ranchers and stockmen.

Bears and man have been associated since early times, both in this country and in Europe, as is shown by crude drawings of prehistoric man. The native grizzly bears were known both to the Indians and to the early settlers, and recorded history of these bears dates back to 1771. North America has often been referred to as the 'land of bears', as it has the greatest concentration of these animals in the world. Numercially, the concentration exceeds the total bear population of all other countries. Heading the list is the grizzly.



The rapid encroachment of what is called civilization has come perilously near to causing the total extermination of this mighty monarch of mountain and forest. Its former range was western North America, from the northwestern part of Mexico through the Rocky Mountains, Sierra Nevada, and Cascade Range to the Northwest Territories; all of the interior of Alaska and on Unimak Island. It is now extinct throughout most of its former range in the United States, with the exception of Yellowstone, Teton, and Glacier National Parks and in parts of northwestern Montana.

The latest big-game inventory estimates only 811 grizzly bears left in the United States, nearly all of which are found in National Parks—a record not to be proud of.

The typical grizzly is a very large, lumbering, heavy, thick-set animal, usually light-brown or tawny in color. The head seems relatively small for the size of the body and the ears are short and rounded. On each foot are five well-developed toes with the front claws long, broad, and somewhat curved. The tail is very short, scarcely noticeable. The fur is long and blackish-gray or brown in color, with the underparts of the body a pale yellowish; sprinkled over all is the white of the tips of the hairs. In early settlers' reports, many references are found to the 'great white or yellow bears'. Later, as the country was opened and these bears became more noticeable, the name 'great white bear' was dropped and the word 'grizzly' substituted, the name being adopted because of the silvery color at the tip of each hair, which give the bears a tinge of grizzly color. The length may vary from 5 to 9 feet and the males weigh from 500 *(Continued on page 18)*

...MALS of North America

n be hunting the grizzly bear holds
probe the behavior of this king of
complepredictable

hunting the grizzly

By **HOSEA SARBER**
Alaskan Game Commissioner

ANY MAN WHO UNDERTAKES to tell you flatly that a grizzly or brown bear will do certain things under given circumstances is sticking his neck out. It can't be done. All we can do is to tell you what they have done and what we would expect them to do, then the unpredictable cusses will usually make a liar of us! The more I hunt the great Alaska brown and grizzly bears, the more convinced I am that no one man knows these animals or the sport of hunting them completely. They are the most unpredictable big-game animals I know of, and by far the most interesting. They are also the greatest and grandest of American big game.

First, to avoid confusion, let me explain that for all practical purposes the Alaska brown bears are all grizzlies. That is, they all belong to the grizzly family, varying into species and geographic races in different regions, until in some sections the brown bears are simply 'super grizzlies'. In speaking of grizzlies, I include all varieties of the Alaska brown bears. I have never been able to detect any marked differences in their traits and temperament, no matter where found, though they often behave differently in different environments.

Throughout the years the grizzly bear has achieved a reputation of being extremely difficult to kill. It is often claimed that they will pack more lead and take more punishment than any other animal in America, and when aroused he must be literally riddled to be put down. I have never found it so, though I have seen scores of them taken under most every condition one could imagine. This does not mean that these animals are easy to kill, or that a shot placed most any place in the body will readily kill them. But a shot, from a rifle of ample power, that really drives in and wrecks his vitals will kill him with no trouble at all.

The reputation of being so very difficult to kill comes largely from gunners who would go to any extremes or make most any claim rather than admit they had done some plain and fancy poor shooting. A shot poorly placed will not put a bear down for keeps, no more than a poorly placed shot will keep a deer or other big game down. But a grizzly is dangerous when shot or aroused, and therein lies the big difference.

Once years ago I was hunting brownies with an old-time hunter who would rather die than admit to poor shooting, or that he had experienced a touch of the well-known buck. We were trailing a wounded brownie in heavy timber, when suddenly the brownie got up growling at thirty-five yards and came on furiously. He came straight at my companion, who was thirty-five or forty yards to my left. We were skirting the edge of heavy, open timber that bordered on the brushy edge of a muskeg clearing. My companion was using a .405 Winchester with 300-grain soft-point bullets, so I was not at first too much concerned about the bear being stopped as I hustled over to help him. He started shooting at once. I got only glimpses of the bear through the brush and timber as it moved toward him fast while I raced over. After three fast shots that did not even check the bear's rush, I was certainly concerned. Things looked bad. My companion's fourth shot, however, stopped the bear, but in a few seconds he was on his feet again spinning around. The bear has just gotten squared away for more fight on three legs when*(Continued on page 19)*

Shy but possessing a keen nose and sharp ears, the grizzly must be hit in the forward half of his body with the first shot . . . unless, of course, the hunter is seeking trouble

U.S. Fish & Wildlife Service

the grizzly bear

Continued from page 16

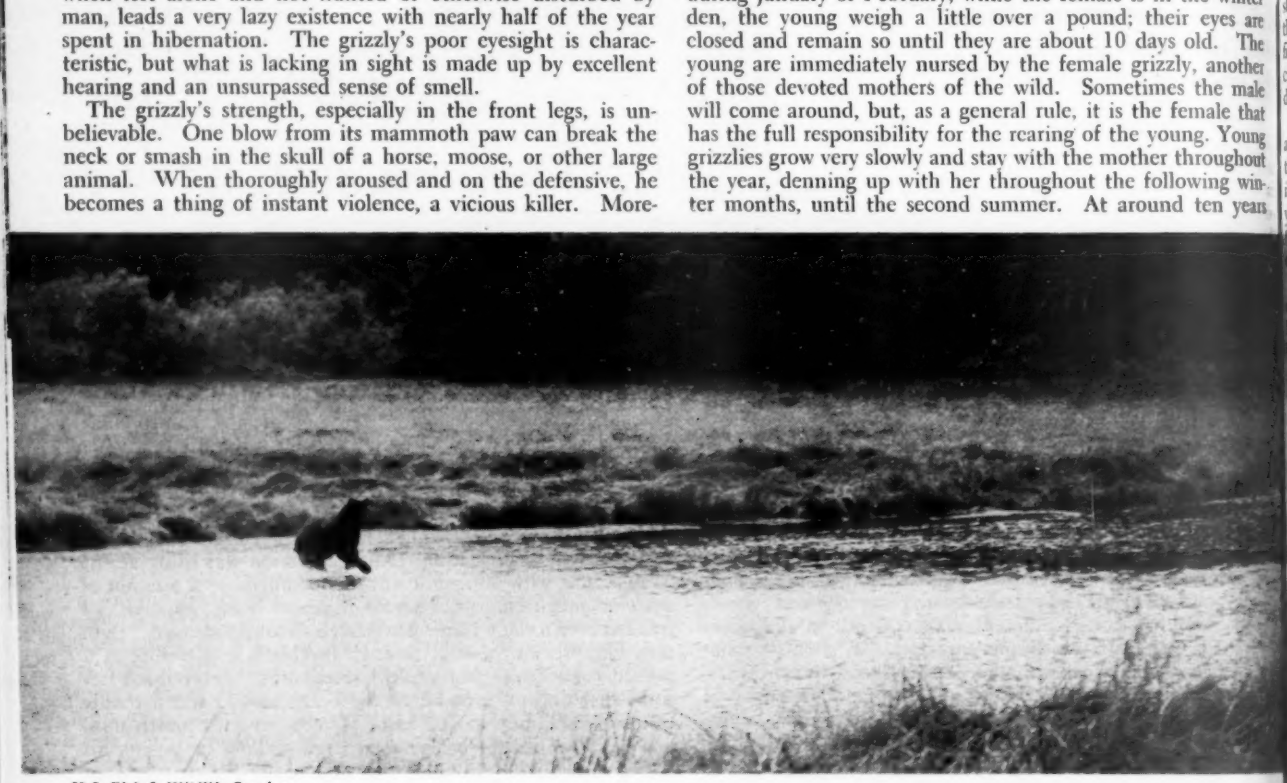
to 1000 pounds; however, it will be a really big grizzly that will go the full 1000 pounds. Average weight is around 600 to 700 pounds, although there are 'records' of this bear going well over the 1000-pound limit. Females are much smaller.

The grizzly bear appears to have no fear of any other animal, not even man, and though equipped by nature to take care of his rights, both in hunting and killing for food and in defense of the young, he much prefers to mind his own business. The grizzly is actually a very solemn and serious animal, even to the extent of being shy. He is very methodical and, when left alone and not hunted or otherwise disturbed by man, leads a very lazy existence with nearly half of the year spent in hibernation. The grizzly's poor eyesight is characteristic, but what is lacking in sight is made up by excellent hearing and an unsurpassed sense of smell.

The grizzly's strength, especially in the front legs, is unbelievable. One blow from its mammoth paw can break the neck or smash in the skull of a horse, moose, or other large animal. When thoroughly aroused and on the defensive, he becomes a thing of instant violence, a vicious killer. Moreover, he can, after a kill, walk off with the carcass of a moose or elk with no trouble or seeming difficulty. With his astonishing strength and extraordinary muscular development, the grizzly is extremely agile. He is expert at catching fish from a fast-moving stream, moving so rapidly that the eye cannot follow the rapid thrust of his front foot into the water in either grabbing the fish or knocking it from the water to shore. The grizzly is surprisingly fast on his feet and can outrun a good horse for the first 50 to 100 yards, and in rough country can not only outrun the horse but keep up this pace indefinitely. While the grizzly chooses his menu from all varieties of animal life, when hungry these bears will eat almost anything. They are equally fond of berries, fruits, leaves, grasses, small twigs. Fish is a favorite food. With the great strength of his front legs and the strong, curved claws, he can dig down for the roots of different plants and for small burrowing animals. Numerous raids are made on live stock, either that in the open or corralled, and other large animals such as the deer, moose, elk are his prey.

Not all grizzlies hibernate; only those living in cold climates find it desirable to do so. They will roam around as late in the season as possible, but when the cold and heavy snows come, usually in November, they will either find a natural cave or a deep crevice between rocks, or dig a hole of from ten to twelve feet deep. Before taking to the den, grizzlies eat very little so that the intestines are clean and empty, although the body is covered with a solid mass of fat. Grizzlies stay in hibernation until warm weather comes.

The mating habits of the grizzly differ from that of most other animals in that they mate only once every two or three years. The male and female are together about a month, but during that time they are a devoted pair. Gestation is reported to be about six months, and usually two young are born in the litter, rarely four. At birth, which takes place during January or February, while the female is in the winter den, the young weigh a little over a pound; their eyes are closed and remain so until they are about 10 days old. The young are immediately nursed by the female grizzly, another of those devoted mothers of the wild. Sometimes the male will come around, but, as a general rule, it is the female that has the full responsibility for the rearing of the young. Young grizzlies grow very slowly and stay with the mother throughout the year, denning up with her throughout the following winter months, until the second summer. At around ten years of age they reach maturity and will have a life span of twenty years or longer.



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Grizzlies are not only strong but exceptionally fast, as in sweeping a fish from water. Other food consists of any animal, berries, roots, fruits and grasses

In the trophy list, first place goes to a Giant Alaska Bear killed on the Alaska Peninsula. Its skull measurements are: greatest over-all, 18 inches; width across the arch, 11-⅞ inches. No other measurements or data are known, although the skull is now in the collection of the University of California Museum. Far down on the list of record trophies, we find a grizzly bear, male, killed in Teton County, Wyoming, in 1938 by a Mr. C. Craven. It has these measurements: skull, greatest length over-all, 16¼ inches; width across the arch, 9-¾ inches; the hide length, 7 feet 4 inches, width 8 feet 1½inches. As it has been judged impossible to distinguish accurately between this family of bears, we find records of 208 specimens worthy of ratings in the record trophy list. ◆ ◆ ◆

Continued from page 17

we both shot, and he sank like he had been hit with a piledriver. Both bullets struck fair in the chest and drove through to the hind quarters, where we found them, mine a .375 H&H Magnum handload. The bear never moved after those shots, where he lay some fifteen feet from my companion.

In carving that bear carcass up, we found that the fourth shot, the one that had first stopped the bear, had struck far out on the shoulder where it had gotten in just deep enough to smash the shoulder bone. The shot had knocked him down, though in a few seconds he was up again. The first three shots had missed, except one that barely cut the skin on the chest, where it had hit too low down to do any damage.

In telling his exciting story in camp that night and for years after, the hunter stoutly declared that he had driven all five of his shots squarely into the center of the chest of that bear 'in a space you could cover with your hand'. It is such stories that adds to the grizzly's reputation of being so difficult to kill.

Grizzlies are, of course, no harder to kill now'-days than they were back in grandpappy's time, but for years rifles and calibers used against them have been getting bigger and more powerful. Some hunters simply cannot find a caliber heavy enough to suit them. They would do far better if they would become familiar with a rifle of sensible size, and learn to handle and shoot it correctly.

Hunting grizzlies in heavy cover is far different from hunting them in the open mountains above timber or on the open tundras of western Alaska. It is also more exciting, and calls for better shooting so as to anchor your bear on the spot. Hunting the brownies and grizzlies on the salmon streams of southeastern Alaska in the fall is this type of hunting. Usually the salmon streams meander through heavy jungles, the only openings being the stream bed and gravel bars. Shots in such hunting are usually at close range, often at well under 100 yards.

To anchor your grizzly on the spot, you must, of course, use a good rifle of ample power with bullets that will penetrate into the vitals, and you must hit him right. No matter what caliber rifle is used, unless the bear is hit right he will not stay down. It is often surprising how easy it is to knock a grizzly down; it is just as surprising how easily and quickly he will get up again. To hit him right, you must hit him where he lives—in the forward half of the body. If broadside, a shot in the shoulders is best, although a shot just back of the shoulders is good. If he is head on, a solid hit in the chest will do the trick. If you get him too far back—in the belly—chances are you will knock him flat all right. Your temperature may go right to the top as you think you made a splendid shot. But about the time you have visions of being photographed with your foot resting on his neck, he will get up and take off. Unless you nail him again and in a good place he will get away. The bear that gets away is the one that adds to his hard-to-kill reputation.

Running at full speed, a grizzly can pace a horse for 50 or 100 yards in the open, or indefinitely in the woods or brush

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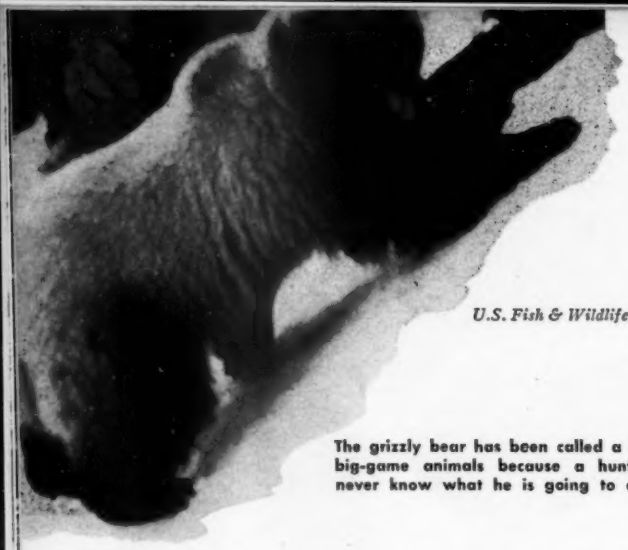
Often the grizzly is credited with having very poor eyesight. While his eyes are not nearly as keen as his nose, they can see plenty good. They can easily see a man in the open at several hundred yards, and if the man is moving they can see him much farther than that.

They also have wonderful hearing, but their sense of smell is incredibly keen. I know of no animal that has so keen a nose. I have repeatedly seen bears get the man scent on bare, dry gravel from rubber boots that had passed hours earlier, then test the air cautiously and take off. Usually the faintest hint of human scent will send a grizzly sailing, particularly if he is out in the open. But once in a while a good snootfull of very close-up human scent will send them into a rage. They may huff and blow and growl, and once in a while one will roar at the scent.

One September evening I was coming down a salmon stream on Admiralty Island when suddenly, just inside the jungle of salmon berry brush and devil club that lined the stream on both sides, there came the full-throated roar of a brownie from about forty feet. With no effort at all, I found myself on the opposite side of the stream, putting some forty feet more between us, where I stood with rifle pointing. I fully expected the bear to emerge from the jungle where it had been disturbed at its salmon dinner. The roaring kept up for a minute or so, then changed to coughing and huffing

U.S. Fish & Wildlife Service

The grizzly is solemn, serious, shy, and very methodical. A lazy animal, he likes nothing more than to be left alone to go his shuffling way



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The grizzly bear has been called a king of big-game animals because a hunter can never know what he is going to do next

as the animal slowly and cautiously backed away. The bear did not charge, but kept growling and huffing furiously for some minutes. The growling and huffing finally settled in one place, and I knew the bear was out of the jungle and in open timber. I wanted the trophy, so I eased in through the jungle fringe to the edge of the open timber, keeping the animal located by the huffing and growling. Stepping up on a log, I could see the brownie with its back against a windfall and its head swinging low from side to side. It was asking only to left alone.

Methods of hunting grizzly bears differ a great deal, depending on the type of country being hunted and the season of the year. As an example, the jungle country of southeastern Alaska is far different than the semi-open mountains of Kodiak Island or the open tundras of the Alaska Peninsula.

If hunting in the jungles, a grizzly is found by working along the gravel bars of salmon streams where he does his fishing. Here, at such close quarters, the hunter must be extremely careful about wind and man-scent. He must also make sure of his shot and place his bullet right so as to stop the bear and keep him from escaping into heavy cover.

When taking a shot at a grizzly, you should, if possible, get yourself into a good shooting position. You should be so familiar with field shooting and your rifle that you can do it with little or no effort. Your chances of stopping the bear are then far greater than if you take a hurried or haphazard shot. Take advantage of any rest that can be had, such as a log or rock. If no rest can be had, it is best to sit down and shoot from the sitting position if no obstructions are in the way. Only as a last resort should a shot be taken from offhand.

In any discussion about grizzly bears, the old questions are sure to come up. How dangerous are they? Will they ever charge? Surely they are dangerous and they will charge, but only under certain conditions of provocation. It is extremely rare indeed that one will actually charge without provocation. Because he will sometimes not let himself be kicked off his own front porch is one reason why he is such a wonderful game animal and why so many sportsmen are eager to hunt them. However, to avoid any possible danger, leave them alone.

Through the years I have been in very close contact with many hundreds of grizzlies and brownies of many varieties, photographing as well as hunting them. While guiding cameramen, both professional and amateur, in photographing these animals, we have approached hundreds of them to very close quarters while taking many thousands of feet of motion picture film and many hundreds of stills. Many score of these bears have been photographed at well under 100 feet, and indeed many of them at twenty-five to fifty feet. On occasion we have a number of times photographed them at under twenty-five feet! Throughout all this work, we have never yet had to kill one or fire a shot except where we had deliberately provoked the bear. To provoke one is to invite trouble, but that is no fault of the bear's.

At close quarters, once the animal had gotten as close as about twenty-five feet, we usually make it a practice to let him know of our presence, either by speaking to him or moving into view. Then it is necessary to *stand still and keep quiet* and let him figure it out: They may stand up on their hind legs, huff and growl and moan. If you simply leave him alone, he will leave you alone. That is all he asks.

There are more silly and utterly fantastic tales woven about the characteristics of grizzly bears than any other animal in America, and these tales grow in the telling. Some self-styled authorities will tell you with a straight face that they will actually stalk a man. Nuts! They will no more stalk a man than will a deer! And I have never been able to find an authentic case of a grizzly stalking a man even after it had been shot and wounded, much less without provocation.

We have over the years trailed up many wounded grizzlies in heavy cover. At such times, they are really dangerous and every precaution must be taken. While they may circle around and wander aimlessly when wounded, I have never yet found any indication that one had circled back deliberately to watch his back trail. When wounded, he may run into

While North America has been called the land of bears, the tremendous number of these animals is rapidly diminishing. The last census showed only 81 grizzlies in the United States

U.S. Fish & Wildlife Service

cover a few hundred feet or a few hundred yards and stop. Usually he will go over the mountain range. But he may lay down, depending on how badly he is hurt and how mad he is. He is just as apt to lay down facing away or crosswise to his back trail as he is to face his back trail. We have examined a great many beds where wounded grizzlies have laid, but never found any indications that they purposely watch their back trail. They are simply mad at being hurt, and when mad one may charge the first thing that comes along. He is far more apt to locate his tormentor in cover by hearing or smelling him than by sight.

Every hunter should make every possible effort to keep a wounded grizzly from escaping. Once a wounded grizzly has escaped into cover, every effort should be made to track him down, not only because of the loss of a splendid animal that may die, but because a wounded grizzly left in the woods may be dangerous to the next hunter that comes along.

The best rifles for grizzly bear hunting are those that deliver plenty of power and heavy bullet weight, to assure that they will drive in through heavy muscles and bone and reach and destroy the vitals. You cannot kill grizzlies with shock alone, no matter what rifles are used. The heaviest-charged rifle that you are sure you can handle properly is best.

The lightest caliber that I would recommend, and one that is ample, is the old reliable .30-'06. For heavy cover, the 220-grain and the 225-grain bullets are best. The 180-grain bullet is also excellent, particularly in open country for longer ranges. No matter what bullet or caliber is used, it must be a bullet that holds together well on impact and penetrates well into the vitals. Rifles of the .30-30 class are entirely too light.

For many years I used the .30-'06 caliber on grizzlies and brownies, and I have always found it to be reliable in every way and of ample power to kill cleanly with proper bullets. When any hunter has a failure with this rifle or one of equal or more power, it is his own fault in every case. One of the best bullets that I ever used in the .30-'06 for grizzlies was the original 200-grain Western Tool and Copper Works bullet. The bullet held together well, yet expanded enough to give ideal performance. With it and a full charge of DuPont No. 17½ powder, I once years ago stopped an old female Kodiak bear that an over-ambitious cameraman had provoked and tantalized beyond her patience. The bullet struck just back of the left jawbone, then smashed the neck bones and into the chest, where it came to rest in the back of the right lung. We found it battered but still in one piece. Possibly the best bullet ever made for grizzlies in .30 caliber was the original Peters Belted bullet in both 180-grain and 225-grain weights. My choice was the 180 grain, as it was good at either close or long range. It would hold together at close range and yet expand well at long range.

Of the present-day bullets in .30 caliber in commercial ammunition, the best performer on grizzlies is the Remington Core-Lokt series. These bullets give very good performance in both the '06 and the .300 H&H Magnum. Bullets that blow to pieces on impact are worthless for such game as big grizzlies and brownies.

Perhaps the best all-around grizzly bear rifle we have today, one that I have used for a number of years in guiding work, is the .375 H&H Magnum—but again only with proper bullets. The .375 will not perform satisfactorily with bullets that blow to pieces on impact. They must hold together and drive in the same as in any other caliber to kill cleanly. Many guides are now using this caliber because of its extra power, which gives added assurance of stopping a wounded grizzly that is escaping into cover. In commercial ammunition, the best bullet performance I have seen in this caliber is the 270-grain Winchester bullet with the small lead point. The bullet holds together well enough on most shots to drive in and reach the vitals.

New York Zoological Society

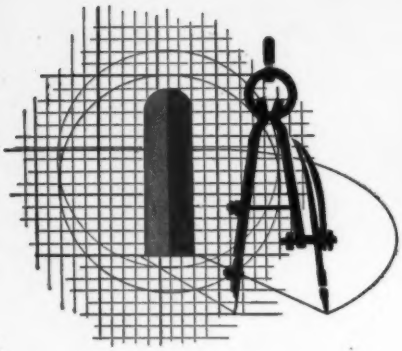
Grizzlies include several species of bear which range in size and weight from 500 to 1000 pounds. Any animal over 1000 belongs in the record category

For open-country grizzly hunting in the Northwest, and for the longer ranges, the .300 H&H Magnum surpasses all others of the commercial rifles. The caliber, in a good rifle and with proper bullets, will make clean kills on the largest of grizzlies at all sensible ranges if the hunter does his part. For all-around work on heavy game, and where the hunter may encounter long-range shots, the .300 'Maggie' is a splendid choice.

In addition, there are a number of wildcat calibers that are good. I have used and seen used any number of them. By the time you have gotten your wildcat completed and thoroughly tested, and the numerous custom bullets tried and sorted, however, you may or may not have a rifle as good as a standard rifle. If you can't be happy without a blown-out wildcat of some sort, by all means get one—confidence in one's rifle is half the battle. Be sure it functions right, and that the bullet performance is correct for the game hunted. Remember that no matter what rifle or caliber is used the bullet must be placed right to kill cleanly. You cannot kill such game as big grizzlies and brownies by shock alone; you must wreck his vital 'innards'.

Rifles of sensible size for grizzly hunting are of the sporting type. They need not weigh more than 8 to 9 pounds at most. A .375 H&H Magnum need not weigh more than 8½ to 9 pounds ready for the field with sights and sling. If a scope sight is used, it will of course be added weight, and it should be a scope of hunting type. It should be mounted low, and placed at its forward limit of eye relief, so as to be sure you do not get bopped with it in recoil.

Lastly, let me remind you to make sure your rifle is properly sighted-in. When you get a shot at your grizzly, make it count. It is the first shot that pays off. ● ● ●



BEGINNER'S BALLISTICS

By STANLEY M. WHITE, M.D.

THE SECOND OF FOUR SHORT ARTICLES
ON THE ELEMENTS OF BULLET BEHAVIOR

LAST MONTH the benefits to be expected from increasing the velocities of rifle bullets, namely flatter trajectory, decreased wind drift, and increased striking energy were discussed. Unfortunately, the increase of velocities is also accompanied by other effects which tend to limit the velocities which can be attained with present-day equipment. Unless these factors are carefully considered by the arms designer and the handloader, the results will be unsatisfactory in performance and dangerous in use. The disadvantages of increased velocity are:

1) Increased recoil:

The effect most noticeable to the rifleman is that when velocities are increased the recoil of the gun is increased if the weight of the bullet remains the same. Recoil is roughly proportional to the square of the velocity multiplied by the square of the bullet weight, so that increasing either bullet velocity or bullet weight causes a marked increase in recoil, which soon may become quite unpleasant.

If recoil is to be kept within comfortable range, then as velocities are increased, bullet weight must be decreased; however, if the bullet becomes too light, air resistance causes it to lose velocity and energy very rapidly. A very light bullet may thus arrive at the target with less striking energy than a heavier, slower bullet, although it may have left the gun with equal energy at the muzzle. For example, the .220 Swift bullet leaves the muzzle with virtually the same energy as the slower .30-30 and the .257 Roberts bullets (1825 foot pounds) but it arrives at a 100-yard target with 100 foot-pounds less energy than the .30-30 and 200 foot-pounds less energy than the .257.

2) Increased pressures:

When gunpowder is burned it changes rapidly from its solid granular form into a large amount of gas which, when confined to the small space inside the cartridge case, creates great pressure. This pressure is exerted on the base of the bullet and pushes it down the bore. When powder charges are increased to give higher velocities, they generate more gas which, confined to the same space in the case, results in higher pressures. This pressure is exerted not only on the base of the bullet but on the sides and head of the case as well. The sides of the case are effectively supported by the walls of the chamber, but the head of the case is not so well supported because gaps must be left in the bolt for the extractor and the firing pin. To strengthen the case head it is made much thicker than the sides, but if pressures become too great, the case head and the mechanism of the gun may give way and blow up in the face of the shooter. The velocities attainable by a given powder and bullet are limited by the pressure that can be withstood by the case head and the action of the gun in which it is to be fired. Fortunately, our powder manufacturers have developed powders that burn more slowly than older types so that some of the powder is not burned until after the bullet has moved forward in the barrel to make more room for the gas. As a result, a sustained pressure thrust is given to the bullet as it passes down the barrel and velocities are increased without increasing the pressures attained.

3) Increased temperatures:

The burning of powder evolves heat as well as gas. If more powder is burned to increase velocities, then more heat will be generated and higher temperatures will be produced in the bore of the rifle. A certain amount of heat is desirable to ignite all of the powder grains uniformly, but excessively high temperatures are undesirable. Here again, powder manufacturers have been successful in making improvements which reduce somewhat the temperatures produced by their powders, but with present powders, super-high velocity loads are accompanied by undesirably high temperatures which are above the melting point of the steel of the barrel. Fortunately, this high temperature is present for an extremely short time and is reduced very quickly when the powder gases are allowed to expand as the bullet leaves the barrel. The result is that only a very thin layer of steel, perhaps only a few molecules thick on the inside of the barrel, is heated to excessive temperatures, but this thin layer, because it is in a molten state, is very subject to being cut away by the blast of gases, powder grains, and primer residue. This cutting away of the barrel surface at high temperatures is known as erosion, and is capable of materially shortening the accurate life of an ordinary barrel. Manufacturers have combated this erosion to a considerable extent by making the barrels of their higher velocity rifles out of special alloys. Unless a gun has such a barrel, super-high velocity loads may be expected to shorten barrel life.

4) Increased tendency for the bullet to fragment:

When a bullet is fired at high velocity it is subjected to tremendous mechanical stresses due to its forward acceleration and to the centrifugal force of its rotation. Its base is also subjected to the high temperature of the burning powder. With the development of higher velocities in small arms ever harder and tougher bullets have been required. At first soft lead was a suitable bullet metal; then, when higher velocities were sought, tin was added to make the lead a little harder. As still higher velocities were developed, it became necessary to give the lead bullet a tough jacket of copper alloy or gilding metal, and with even higher velocities the thickness of these jackets must be increased.

A bullet of inadequate strength is likely to fail to hold together at one of three points. First, it may break up as it is driven into the rifling; here an improperly built bullet may leave part or all of its jacket in the bore to cause a very dangerous obstruction to the next shot fired. A bullet which does not actually break up may be so deformed that its accuracy is completely destroyed. Second, the bullet may fly to pieces as it leaves the supporting walls of the barrel because the jacket alone cannot resist the centrifugal forces tending to tear it apart. Third, the bullet may fly to pieces when it hits an object in its path. Fragmentation at this point may or may not be desirable. In a target or varmint rifle it is desirable, for it eliminates any danger of the bullet ricocheting from the ground or backstop. In a game rifle, however, fragmentation is undesirable for it will result in destruction of too much meat and inadequate penetration.

The explosiveness of this fragmentation in a thin-jacketed bullet fired at over 3000 feet per second is truly remarkable. When such a bullet is fired into a bank of moist sand or earth, it makes a globular hole the size of a large grapefruit. Bits of copper jacket can be found inside, but the lead is found only as a gray coating on the particles of sand. On big game much the same thing happens, and a large globular wound is made under the skin, but no part of the bullet will penetrate to the vital structures and so a clean kill will not result. Furthermore, if our game is in woods or brush, a light high-velocity bullet may fly to pieces if it strikes a twig or foliage, while a heavier slower bullet would have carried through intact to make a kill.

Unfortunately, the hardness of a bullet has definite limitations. A bullet must be soft and malleable enough to swage to the shape of the rifling. Extremely high and dangerous pressures will be created by the confined powder gases if their release is delayed by a bullet that offers too much resistance to this swaging. It is conceivable that a pre-rifled iron or steel bullet might be made which would be fitted into the rifling of the bore before firing, but such a hard bullet would cause rapid barrel wear, and would be extremely dangerous if it jammed because of improper entry, or dirt in the barrel. Arms manufacturers have made numerous attempts to control fragmentation and still allow swaging and some 'mushrooming'; the "Kore-Lokt" and the "Silver-tip" bullets are two popular examples.

Thus it appears that as velocities are increased, flatter trajectories and improved accuracy are obtained, but a number of undesirable side effects must be accepted. Such guns as the .220 Swift, the .257 Roberts, the .270, the .30-'06, and the .300 Magnum, represent pretty well the velocities that are attainable consistent with complete safety and reasonably economical production of both guns and ammunition. In the .220 Swift velocities exceeding 4000 feet per second are available, while the others range from around 3000 to 3600 feet per second. The careful handloader with a first-class rifle can safely exceed these velocities by weighing his powder charges; however, he is allowed only one mistake!

Because maximum strength is required to withstand the high pressures developed in these guns, they will be found to be almost always of bolt-action design, and somewhat heavier and more expensive than guns for other cartridges. Rechambering other guns to take these high velocity cartridges is dangerous because the actions are usually not sufficiently strong to hold up under the beating they will take.

But, before turning in the old carbine and demanding the highest velocity attainable and accepting the disadvantages that go with it, it would be well to examine more closely the advantages that are to be gained—so next month an analysis of trajectory changes produced by increasing velocity will be presented. (To be continued) ♦ ♦ ♦

We're Planning a Convention

Frankly, we don't know if world conditions will let us hold it. If they do, we hope you'll be able to join us at the Golden Gate—San Francisco will be your host for the 1951 NRA Annual Convention, October 6—12.

This year's meeting will be keynoted by emphasis on the NRA nationwide marksmanship training program and other phases of national service which the organized shooters of America are best prepared to give in these challenging times. You'll have a really important story to carry back home.

In between Convention meetings, you'll have a chance to see and handle the finest and latest in all kinds of shooting equipment, displayed at the big Convention Exhibit Hall.

How about planning ahead with us? It's not too early now to line up club delegates!

For Advance Reservations—Write to
CONVENTION SECRETARY
NATIONAL RIFLE ASSOCIATION
1600 Rhode Island Ave., N.W. • Washington 6, D.C.

Producing Reliable Handgun Reloads

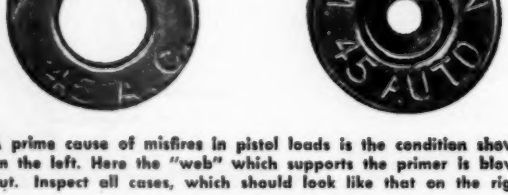
If you load your own ammunition, popping them all into the ten ring is largely a matter of attention to details. Here are some pointers from an expert

By Colonel A. M. Libasci

SOONER OR LATER, if you are a match pistoleer, you will want to load your own ammunition. Most of us cannot afford a full shooting program using "boughten" cartridges. Furthermore, we can get exactly the load we want by reloading.

I am not going to discuss here the fundamentals of reloading, describe reloading equipment, or recommend any specific loads. This information is readily available in many recent issues of the AMERICAN RIFLEMAN and in manufacturers' handbooks and catalogs. Instead, I want to emphasize a few points that will help you turn out more reliable reloads.

The prime requisite of a pistol handload for target use (after you have developed your load for accuracy) is that it must be reliable! In these days of ever-increasing toughness in pistol competition no one can afford to lose as much as one point needlessly. Malfunctions will penalize you tremendously even with the new refire rule in effect. You will invariably become upset and nervous and lose points. Malfunctions and refires are not conducive to the calmness of mind and smoothness of performance so necessary to the production of good scores!



A prime cause of misfires in pistol loads is the condition shown on the left. Here the "web" which supports the primer is blown out. Inspect all cases, which should look like that on the right

To be systematic let us break down a reload into its components: the cartridge case; the primer; the bullet; lubricant for the bullet; powder. Failures in handloads may result either because of defects of any one or more of these components or because they are not assembled properly. Let us study each component and try to prepare rigid specifications for each and also for their proper assembly to guarantee a reliable reload.

First, the cartridge case. This may be of brass, brass nickel-plated, or exceptionally you may pick up some steel wartime .45 ACP cases. You can cull these by testing with a magnet. Some reloaders use these although they are hard on resizing dies. I have heard unsubstantiated opinions that steel cases will give more uniform results in the .45 ACP. The brass and nickel cases will function equally well in the .38 special caliber. However, in reloading for the .45 ACP you will soon find that the nickel case will not hold the bullet as firmly as the brass case. The result is that when the bullet nose hits the loading ramp of the barrel it may telescope into the case with resulting trouble.

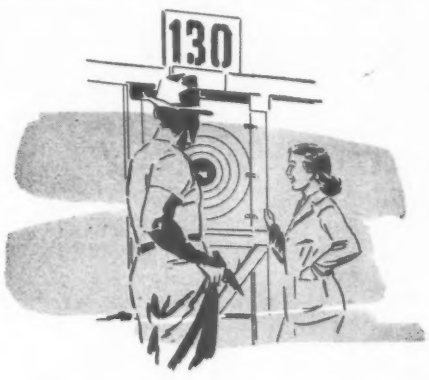
It seems that the nickel case has thinner walls and will not hold the bullet firmly when resized to the same outside diameter. There are two very simple and very effective solutions: 1) Use a slightly oversized bullet, or 2) Use a slightly undersized resizing die for all your nickel cases. (Do not try to solve this problem by overcrimping!) I solved my problem by obtaining a bullet resizing die of 0.453 inches diameter for bullets to be used in nickel cases only. For my brass cases I use a bullet resizing die of 0.452 inches. No more "telescoping" resulted.

Incidentally, the case-resizing dies of "Carboloy" steel

will completely eliminate scratching of your cases. You don't have to wipe off your cases before resizing. They come out of the die positively burnished and without a mark! These are truly "lifetime" dies.

We hear that the most important factor involving cartridge cases, especially for the .45 automatic, is that they be of uniform and proper length. After an extensive series of experiments I can vouch for the fact that rigid tolerances in case length are not as vital a matter as one would think. No one I know trims cases to uniform overall length either for .38 Special or for .45 ACP. Case length tolerances for the .45 automatic are given as 0.893 to 0.903 inch in Al Barr's article "Handgun Reloads" in the May 1949 RIFLEMAN.

I don't think you need worry about cases over 0.903 inch. I measured 3,000 of them (using a dial gage for speed) and never found one over 0.903 inch long. As for short cases causing misfires, I don't believe it. In a series of trials I trimmed down cases in steps of 0.005 inch. I reached a case length of 0.855 inch and still no misfires! I quit as I didn't



think these very short cases were doing my gun much good.

In summary then, we find that case length is not an important factor in causing failures in .45 ACP handloads. Please do not misunderstand me. I don't recommend using these short cases! I don't think, however, that there is need to mike your cases to cull these out.

Little can be said about case diameter. Use the proper resizing die and you will have no difficulties either with .38 Special or .45 ACP. If you want to be doubly sure an unsized case has not been loaded (especially for the .45 automatic) test your match loads by dropping them into your barrel chamber, one at a time. The unsized cases, if present, will be noticeably tight. Such a test may save you a malfunction in a match.

Primer pockets should be carefully inspected for blown webs. These will give you trouble as the primer has no firm support for proper ignition. I use a Star tool myself but I decap as a separate operation as I like to clean and inspect the primer pockets. This will take longer but again is worth it.

I will not go into detail on the other more obvious case defects such as cracks, sawtooth mouth edges, et cetera. These should be picked up and discarded during primer inspection.

One last point. For more uniform results use cases of the same manufacture for your match shooting. They will load more uniformly and shoot more uniformly due to less variation in length, thickness of walls, primer pocket dimensions, et cetera.

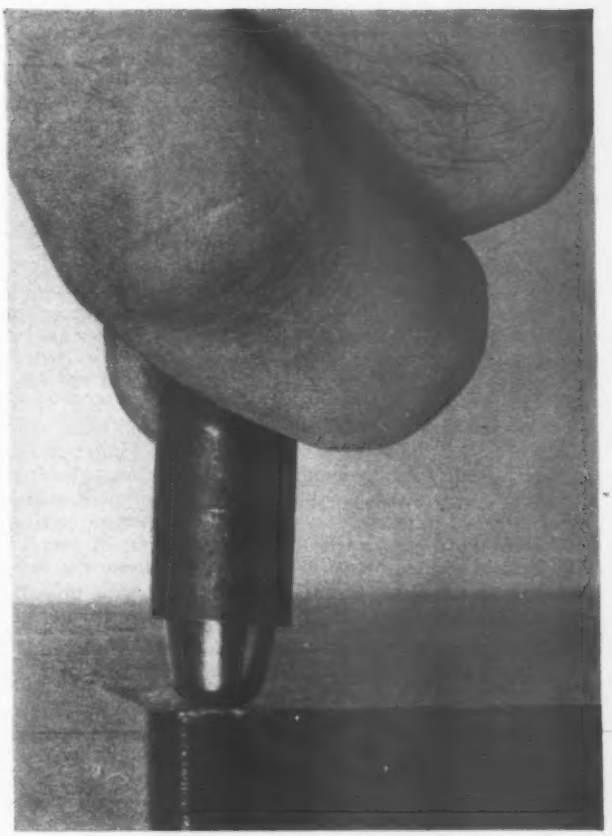
Next, let's discuss primers. I find that most reloaders blame the majority of their ammunition failures on faulty primers. My experience is that the primer can be the least important source of misfires if fresh primers are used, if they are carefully inspected and, most important, if they are carefully and properly seated. Inspect your primers carefully! See that the anvil is intact and in place, and that the cup is not damaged, and that the primer mixture is present. Don't bounce your primers about in metal trays. If you have primer trouble and get misfires that will ignite with a second hammer blow, have your gun checked for a weakened firing pin. You will rarely find a "dead" primer. I have found only one in over 8,000 reloads in .38 Special and .45 ACP caliber. I dissected this one out and found no discernible priming mixture. It had passed my inspection but should not have!

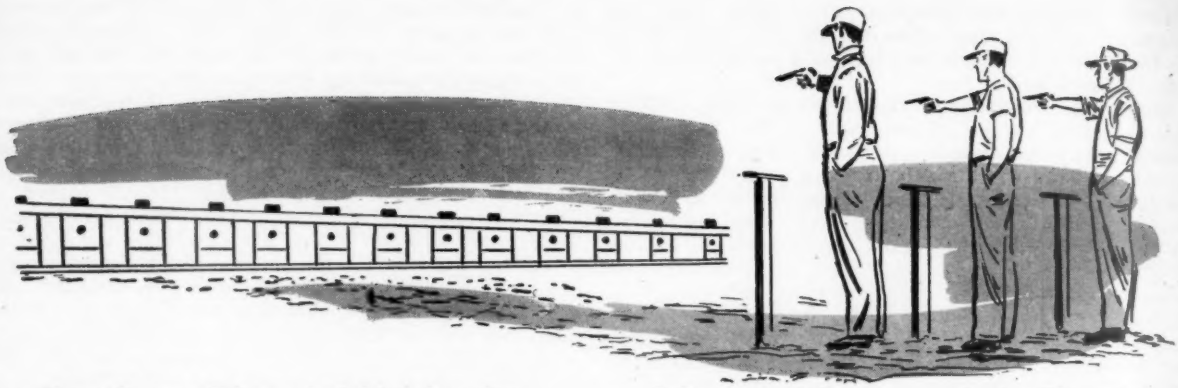
Our third and fourth components, the bullet and bullet lubricant, will be discussed simultaneously. Ordinary care in moulding, sizing, and lubrication will prevent most of the difficulties traceable to bullets. The alloy should be of appropriate hardness for the purpose intended. Bullets for the .45 ACP should be harder than those for the .38 Special or the bullet will be deformed when it strikes the loading ramp in feeding into the chamber of the pistol. Refer to the handloading manuals for lead-alloy mixtures to give the correct hardness.

Bullets should be carefully inspected before sizing for square bases and sharp corners on all edges. During sizing, care should be taken to wipe all excess lubricant off the bases. If this is not done the lubricant may melt in hot weather and mix with the powder and produce a gummy mess that will result in a hangfire or a misfire.

As for lubricant, use an approved mixture or, better still, purchase it. It is a minor factor in the expense account. Make sure you do not assemble ammo with unlubricated bul-

When reloading ammunition for the .45 automatic, you will find it worthwhile to make this check in order to guard against loose bullets





lets. If you do you will have a leaded barrel to clean!

Our last component is the powder. This usually gives the greatest trouble when it is absent! Each year many otherwise beautiful barrels are further ornamented by ringing or bulging. This occurs when handloaders load a cartridge without powder. The result is a stuck bullet and the next shot produces a nice ring or bulge in the barrel, really fixing you for keeps. What causes these? Pure carelessness, in my opinion. I know most of them occur with reloads prepared on multiple-type tools. We become so enthused and so engrossed with the speed of these wonderful tools that we don't stop to recharge the powder measure! Another source of this trouble is to leave the powder in the powder measure for a few days. The powder will cake and when you resume there will be no powder thrown. I've see this happen time and time again. How can we avoid these powderless and powerless reloads? Simply by exercising ordinary care and intelligence. Keep your measure filled while loading. Empty it completely when through reloading and charge it up again when you operate your machine again. Personally I glance inside every cartridge case when reloading to see that the charge has been thrown! On the Star it merely involves backing up the shell plate about an inch and slipping out the shell. You can rig up mirrors if you want; I do it the hard (and the sure) way. My Berdon-processed guns and barrels are too valuable and difficult to replace.

What about the process of assembly itself?

Our experiments on case length indicated that variations above and below the recommended length did not produce misfires nor hangfires. What then is responsible for most of our failures? In my opinion, faulty seating of the primer is responsible for the majority of ignition failures! To be more specific, primers that are loosely seated, or seated shallowly so that they project above the surface of the case head. To prove this point, I loaded up some .45 ACP cases with primers properly seated against the web, and some with primers projecting 0.005 inch, 0.010 inch and 0.15 inch above the case head. Twenty samples of each type were loaded. The results were as follows: Those with properly-seated primers all fired properly. Of those with primers projecting 0.005 inch above the case head, one misfire out of twenty. Of those with primers projecting 0.010 inch above the case head, two misfired out of twenty. Of those with primers seated 0.015 inch above the case head, eight misfired out of twenty!

The cause of the misfire is obvious. The primer blow is cushioned because the primer is seated out from the web and has no firm support. Here to my mind is the crux of the ignition problem in .45 reloads especially. (In .38 Special reloads if you seat your primers to project from the base of the case your cylinder will not revolve.) Seat those primers well into the pockets. Don't let them bulge or project from the case. Inspect all your reloads to be sure that your primers are flush with or below the case head. The easiest and quickest way to do this is to stand each round on its head on a flat steel plate and observe if it wobbles. That's all there is to it. (I used a dial micrometer gage to measure the actual distance the primer bulged out for my experiments.) Cull all reloads with "bulging" primers and you'll save some points in matches—or better still, prevent them by good seating technique.

Next in importance in assembling our components is proper seating of the bullet. Seating to a recommended depth of 0.275 inch for the .45 ACP will leave enough bullet exposed to engage the rifling when the load is chambered. This will give you a sort of self-adjusting headspace feature that is desirable, also less jump and possibly better accuracy.

The bullet in a .45 ACP reload is held in its case with no discernible crimp. To do this properly involves either chamfering the case (which will shorten your case reload life) or by belling or opening the mouth of the case slightly. This is the more desirable method but will cause you grief if not done carefully. Bell out the mouth with the smallest possible amount you need to, in order to insert the bullet and get it started by hand. This will prevent shaving and bullet and case deformation. If you open the mouth very wide you weaken and overstretch the case and your bullet will not be held tightly. As a result when the bullet tip hits the loading ramp of the barrel chamber it will telescope into the case and give you a real jam. (The only one I ever had cost me 40 points.) To prevent this, do not overstretch the case mouth. To test your ammo to be sure the bullets are in there tightly, check each reload by trying to force the bullet deeper into the case by a firm push against the work bench. Don't push too daintily, but don't overdo it. You'll find one occasionally that will collapse as you push. I had eight collapse in 3,000 reloads.

Lead shavings have been blamed for malfunctions. Unless these are very bad they will not cause trouble. I confess that I clean all my loads by buffing the lead-case junction with a rotary fibre brush. This saves my fingers and inflates my pride in getting a clean load. I fired 200 rounds recently as a test, shavings and all, without cleaning, and without a malfunction. However, I must admit the shavings were minute, due to starting the bullet by hand in a slightly-opened shell mouth.

Don't use light or "squib" loads in an automatic pistol. They are sensitive to minor variations in powder and primers. A slight variation in powder charge may cause failure of slide opening and a jam. Use a load that will function postively.

Another tip in assembling your reloads is to number each box consecutively. Then if you run into trouble you can cull and reject or inspect only those boxes involved.

One last word. Don't hurry or attempt short cuts on your match ammunition. Take it easy, and you'll not regret it.

Legislative BULLETIN

A MONTHLY REPORT OF CURRENT LEGISLATION

FOR THE NEXT several months this roundup of legislation will be a monthly feature of the AMERICAN RIFLEMAN. Its purpose is to let you know what firearms laws, good and bad, have been proposed in your state, and what has happened to them.

The legislatures of all but six states met in regular session during January. The terms of these sessions will average sixty days but many will go over into March and April. The six state legislatures that have not met in regular session include Alabama (meets in May), Florida (meets in April), Kentucky, Louisiana, Mississippi and Virginia. The last four states do not meet, except in special session, until 1952.

Bills that are being considered in your state legislature can be influenced only by you and the other voters of your state. The members of the legislature are your elected representatives and will do what you want them to do—if you tell them! Don't hesitate to express your opinion on any bill in your state legislature. And don't "wait for Joe to do it!"

California: Assembly Bill 1940 would amend Section 8 of the Deadly Weapons Control Law to require submission of finger prints by all applicants for a license to carry a firearm concealed. *Action:* Referred to Judiciary Committee.

Assembly Bill 1489 would amend Section 11 of the Deadly Weapons Control Law to provide a waiting period of seventy-two hours between purchase and delivery of a pistol or revolver. *Action:* Referred to Judiciary Committee.

Assembly Bill 3078 would amend Section 8 of the deadly weapons control law to require applicant for a license to carry a concealed firearm to be certified by three or more persons in his community who have known him for five or more years. *Action:* Referred to Judiciary Committee.

Assembly Bill 3297 would amend Section 8 to require an applicant for a license to prove he has not been convicted more than once for driving while intoxicated. *Action:* Referred to Judiciary Committee.

Senate Bill 292 would add to the Fish and Game code a new section to prohibit carrying or possession of any firearm, except a pistol or revolver, in or on any vehicle, unless unloaded in both magazine and barrel. *Action:* Referred to Senate Committee on Fish and Game.

Connecticut: Senate Bill 274 would prohibit the carrying of loaded firearms in a motor vehicle. *Action:* None reported.

District of Columbia: Federal House Bill HR 1042 in the 83rd U. S. Congress would amend the District of Columbia firearms law to require a police permit to purchase a pistol. *Action:* Referred to House Committee on the District of Columbia.

Georgia: Senate Bill 43 would repeal previous law as to manner of buying pistols and obtaining licenses. New legislation to be provided would require $1,500 surety bond for license; application for license required in order to purchase. *Action:* Killed, on protest of Georgia sportsmen.

Iowa: House Bill 345 by McNeal would amend Iowa Code to prohibit the sale, delivery or gift of any firearm to any person not having a permit from the Sheriff or Chief of Police. *Action:* Referred to Committee on Police Regulations.

Maryland: House Bill 103 would require declaration of ownership of all pistols and revolvers; all to be submitted to police for ballistics test, police to record ballistics of each for future use. *Action:* Referred to Judiciary Committee.

Senate Bill 14 would change the carrying of a concealed firearm from a misdemeanor to a felony.

Massachusetts: House Bill 467 would amend the present pistol licensing code to eliminate certain safeguards for sportsmen now in the law. *Action:* Withdrawn by sponsors for redrafting to include missing language.

House Bill 1885 would prohibit entirely the manufacture or sale of air rifles in Massachusetts. *Action:* Referred to Joint Committee on Military Affairs and Public Safety.

House Bills 46 and 1891, Senate Bills 304 and 305, would attempt to control the misuse of air guns and sales to minor children. *Action:* All referred to Joint Committee on Military Affairs and Public Safety.

House Bill 1894 would increase many license fees as a finance matter. Included is increase in pistol license from 50 cents to $1.00. *Action:* Referred to Joint Committee on Municipal Finance.

House Bill 11 would provide a fine or prison term for anyone using a firearm in a careless or negligent manner so as to cause death or bodily injury to another or damage to property or livestock. *Action:* Referred to Joint Conservation Committee.

Minnesota: Senate Bill 345 (House 466) would make it illegal to possess out of doors, except upon target ranges operated under a permit from the Game Commissioner, any rifle or shotgun unless unloaded and cased, during a period of ten days preceding and five days following the deer season.

Montana: Senate Bill 140 by Anderson would prohibit the sale, gift, furnishing or discharge of any air gun or ammunition therefor in the state except with respect to shooting galleries, military or police, educational institutions, or NRA clubs. *Action:* Judiciary Committee has reported unfavorably.

New York: Assembly Bill 993 by Ross would prohibit residents of New York City from carrying or possessing rifles without registration and license from police. Also prohibits sale of ammunition to any person unless license is shown. *Action:* Referred to Committee on Codes.

Assembly Bill 189 by Becker is the New York State Civil Defense bill providing for state and local government powers during the defense emergency. This bill would give complete power to the Industrial Commissioner with respect to manufacture, sale, possession, use, or ownership of firearms, fireworks, or explosives. *Action:* As a result of protests, an agreement has been reached to eliminate the words *possession* and *ownership*, limiting the delegated power to shipments by common carrier.

Senate Bill 1624 (Assembly 1607) strikes out provision that game protectors, in confiscating devices used illegally in taking fish and game, may not seize guns. *Action:* Referred to Conservation Committee.

Senate Bill 1847 by Hatfield would increase from $1.50 to $5.00 maximum fee to be charged outside of New York City for issuing pistol license. *Action:* Referred to Codes Committee.

Ohio: House Bill 76 would prohibit the possession of loaded firearms in or on any vehicle while moving or standing on any public road. *Action:* Reported favorably in the House.

Rhode Island: House Bill 598 by Savage would amend Rhode Island dangerous-weapons law to include dart guns using wooden projectiles tipped with rubber. *Action:* Referred to Judiciary Committee.

(Continued on page 39)

Some Aspects ub

It's funny how complicated a simple thing can be. Take the problem of lubrication, for instance, and strip it to its essentials . . .

THE AVERAGE GUN-OWNER knows very little of the basic facts behind the lubrication of metal surfaces. It seems to me to be well worth while to investigate the whys and wherefores of the problem.

As shown opposite, even the most highly-polished surface is composed of irregularities and 'points'. Obviously the diagram is of a highly magnified area, but the fact that the rough spots are so small makes no difference. In fact, the closer the area under discussion approaches molecular size, the greater is the effect discussed.

Throughout the discussion it is very important to keep in mind that the 'points' mentioned are so small as to be invisible to the naked eye. They may even be invisible to the microscope. They are there, though, and probably are only a little larger than a molecule itself.

Let's suppose that you lay two metal surfaces one on top of the other. These surfaces are so highly polished and finely finished that they are considerably smoother than glass (which is really not very smooth at all). The two surfaces will seem to rest on each other in very close contact. They will seem to touch. Actually they will be separated considerably by the high spots on the surface and will not touch except at these high spots. The middle drawing shows what I mean.

Where one of these points actually touches and rests upon a similar point on the other surface, there will be an instantaneous reaction and the two points will be welded (or fused) together by molecular attraction. The strength of such a bond will be equal to the strength of the solid metal itself.

The top plate may easily be lifted off the lower one, despite the welded points, because the points of such real or actual contact are so few. They may be as few as four or five, though there may be more with very smooth materials. Wherever such welded points are present they will be torn apart by the removal of the plate. Because the points are so small, such destruction will be invisible.

Another test may be made using two glass plates. Clean the surfaces well with alcohol and then place one plate on the other. Now try to slide the top plate over the lower plate without lifting it up. It's very difficult to do if the plates have been properly cleaned and are very smooth. If the plates are clean, any sliding that may be done will result in the marring of the touching surfaces because the clean plates have a fairly large number of points which touch and weld together. The welding keeps the plates from sliding easily and, when sliding does take place, the welded points or bridges are broken and some glass is torn from the faces.

The fusion or welding of points of real contact takes place at room temperature and with no outside forces involved. Molecular action alone is responsible.

Normally, at least with metals, a surface will have formed upon it a thin but nonetheless positive film of oxide as soon as it is exposed to the air. The film may not be thicker than a molecule or two, but even that aids in lubrication of the surface so that destruction does not take place in normal usage. In addition, miscellaneous substances such as water vapor, grease, dirt, and perspiration also aid in lubrication and thus furnish some protection.

When one plate or surface slides upon another, a series of jerky movements takes place. The movement may be so swift that the jerks are unobservable, but they are there. These jerks occur with the making and breaking of the fused bridges when points of real contact approach one another. Even at very high speeds they are made and broken.

It is estimated that the force required to maintain sliding action is the same as that required to start sliding from a position of rest. This is further evidence that the bridges are made and torn apart at high speeds.

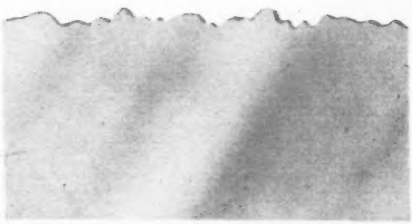
So far, the discussion has concerned materials of the same type, but it may be carried on to dissimilar metals or substances in the same manner. The great difference lies in the fact that the material with the lower melting point will have material torn from it and that the other surface (of a higher melting point) will retain the material torn from the other. In other words, lead sliding upon steel will leave smears of lead on the steel face. Copper will leave smears on the steel. On the other hand, copper will have lead smeared upon it because copper has the higher melting point.

Here we come into the familiar field of firearms. When a lead or copper projectile is passed through a steel barrel, the surfaces will be brought into very close contact. The points of real contact will be rather numerous because the normal bullet is at least bore size, if not larger, and a swaging or compression takes place. At any point of real contact some of the lead will be torn away from the bullet and will be smeared on the surface of the bore. This is easily demonstrated by shooting unlubricated cast bullets through a dry barrel.

The most important phase of lubrication is the formation of a 'boundary' film. This is formed when the lubricant adheres to the metal surface in a thick enough film to completely cover the high points of real contact (illustration 3). The film will still be only a few molecules thick but it will prevent the surfaces from approaching closer and forming welded bridges.

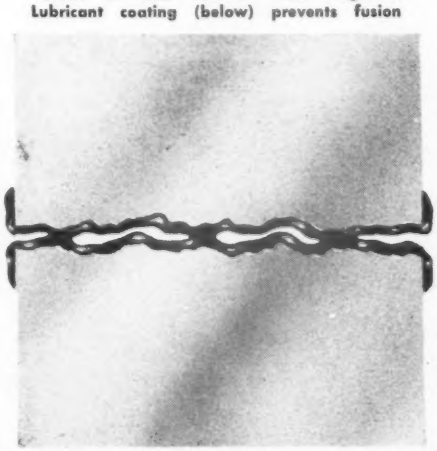
The 'oiliness' or 'slipperiness' of a lubricant is determined

ubrication



Even the smoothest of surfaces, magnified many times, presents roughened appearance

When two surfaces come into contact, tiny "areas of real contact" fuse together. Lubricant coating (below) prevents fusion



BY A. DONALD NEWELL

by its properties of forming such a 'boundary' film.

Mineral oils are not very good at forming such films and thus are slightly deficient in lubricating properties. They are satisfactory for most purposes and are cheap; therefore, they are widely used. Such oils may be improved considerably by the addition of small amounts of chemical substances (free fatty acids) with very long chain molecular structure. The longer the chain structure, the better the lubricating properties.

Stearic acid is one of the best of the additives, and about one to two percent of stearic acid in mineral oil will increase its lubricating qualities immensely. Incidentally, stearic acid does not have the corrosive properties usually associated with the name acid and it is safe to use in small quantities even in fine rifle bores.

In considering lubricants to be used under conditions where high pressures and temperatures are expected, small quantities of sulphur-containing compounds or chlorinated wax are useful.

There is an entirely different type of lubricant which has been used of late. This one is graphite in one of its many forms. Graphite is a form of carbon, but it takes the form of many minute plates which may easily slide over each other. Thus, when two surfaces are separated by graphite and movement takes place, the plates slide and easy motion takes place. The points of real contact of the metal never meet because the plates cover those points and thus no damage is done to the surfaces.

Suspensions of graphite in oil and water may be purchased (the various Dag solutions) or plain flake or powder graphite may be used. In the liquid form the particles are so small that they do not settle out of the liquid and thus remain ready for use at all times.

Let's suppose that we have lubricated some handloads (cast bullets) with a very good mixture of one of the above. The barrel has been well taken care of and you have a thin coating of anti-rust oil in it. Upon firing the first shot of the day, the bore-size bullet forces its way through the bore, scraping out all of the oil ahead of it. Behind the scraping edge is a relatively wide area of pure lead. Inasmuch as the forward edge has removed what little lubricating effect the bore oil might have, you probably will have a small amount of lead soldered to the bore. This is because, while you have an excellent lubricant in the grease grooves behind, the forward fraction of an inch has every chance in the world of forming many bridges at points of real contact. Then, no matter how much lubricant you force through on top of these lead smears you can very easily build up the smears into lumps by succeeding bullets. The same thing goes for rough, pitted bores. The best lubricant in the world will not prevent leading there.

The partial answer to this would be to either add a little of your hotsy-totsy lubricant to your normal bore-protecting oil or to swab the bore lightly with it before shooting.

This whole thing rests upon the fact that, once you have introduced a good 'boundary' lubricant into the bore, each bullet will remove some of it but it will also add a bit from its grease grooves for the following shot to travel upon.

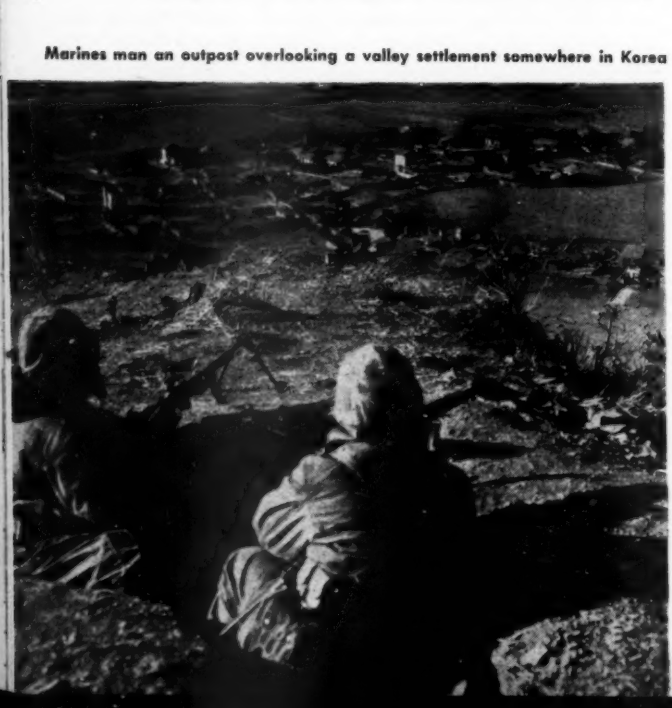
A viscous or heavy-bodied lubricant will be more effective, as a rule, than a thin or light material, under the same conditions, though the lubricating properties are not determined by viscosity (body). Generally, the lubricants with the greatest adhesion to metal and greatest degree of 'oiliness' will be of this heavy bodied nature, however, as witness stearic acid and graphite in their native forms.

This note on lubrication can, and possibly will, bring out a great many answers which are sorely needed. A great deal of work is necessary, though, and the answers rest in the laps of the experimenters and handloaders who have done so much in the past to answer questions modern technology digs up for us. ◆ ◆ ◆

Early last month, these Americans took up positions behind one of the high walls surrounding the ancient city of Suwon

Atomic bombs notwithstanding, it's a rifleman's war in Korea . . .

Marines man an outpost overlooking a valley settlement somewhere in Korea



With typical Yank ingenuity, this soldier has central heating in his foxhol

What Price Riflemen?

IN THE FACE OF ATOMIC BOMBS AND SUPER WEAPONS, WHERE DOES THE INDIVIDUAL RIFLEMAN FIT INTO THE PICTURE? VETERAN WAR CORRESPONDENT AND ONE-TIME RIFLEMAN EDITOR BILL SHADEL HAS AN ANSWER

RETURNING RECENTLY from Korea's battlefields, Major General David G. Barr, who commanded the US Seventh Division in its fight to the Manchurian border and the subsequent withdrawal to Hungnam after the Chinese Reds opened their big offensive, had some pointed remarks to make about US training. Said General Barr: "Ground troops should be trained to appreciate the fire power of their weapons, and much more stress should be placed on training for night fighting and living in the country. They should be trained, also, for guerrilla warfare."

Also, the late Lieutenant General Leslie J. McNair, chief of the Army's Ground Forces during the last war, once had this to say: "There is still no substitute for hits in battle. The nearer a rifleman approaches perfection, the more confident and self-reliant he becomes and the greater will be his effectiveness as a fighter."

Make no mistake about it. All of the talk about push-button warfare—the generally popular concept of atomic warfare and super weapons—all of this to the contrary, *the rifleman is more important than ever.* Korea has proved that case once again . . . and there will likely be many more Koreas before there is an all-out atomic war.

Let me review some of the thinking here in Washington, gathered as a reporter in the Pentagon and in the halls of Congress. (This is not a prophecy . . . any words written now might be completely outdated or contradicted before they reach the printer's forms . . . but it is a summation of today's views, gathered from the highest sources.)

First, the concern over Europe. A national policy is now being defined in Congress which, with minor exceptions, will endorse the administration's planning for defense as a joint effort of the North Atlantic Treaty nations. If any one of these nations is attacked, we are at war. Perhaps Yugoslavia offers the only remaining move by Russian satellites where the Soviets can still send in their stooges without directly taking part. Even here, there's a growing demand that the United States warn the Soviets that our aid to Yugoslavia will not be limited to "aid short of war", with the inference that atomic bombers will destroy Russian factories while the Yugoslavs fight off the Russian stooges on the ground. There are many in this country who insist that had we given such a warning in South Korea, the Communists would never have attacked —providing, of course, that they accept our stock-pile of atomic bombs as the big deterrent to all-out war. Admittedly, that is the only thing we have at the moment to back up our warnings.

Aside from Yugoslavia, other possible eventualities which might pull the trigger for the Big War are an attack on Western Germany by East German communists . . . or an attack, internally or externally, on Italy or Greece. Particularly sensitive, outside of Europe proper, is the area of Turkey and Iran. These countries are considered our all-important flanks in the big Western European defense picture, along with Norway in the north. Norway, according to no less an authority than General Eisenhower, is determined to go all-out in its resistance to any Communist move. And Norway, if it were reached by the allies before it fell, would be another Korea; even more so, in terrain and type of fighting. The same applies to Turkey and Iran. Strategically, these Middle Eastern nations are two of the most important keys to the protection of North Africa. And North Africa, according to our military thinking, must be defended, for the air bases it can support for attack on the Russian land mass, and for the Belgian Congo which presently is our chief source for the uranium of which atomic bombs are made. Given suitable time, the areas of Turkey and Iran could support the delaying action necessary if our defenses are to be set up behind the Suez Canal. Here on our flanks, then . . . more Koreas, with much of the same type of fighting. And what has Korea proved? It has proved, first, that there is a false sense of security in the new super-weapons being so glibly mentioned.

Last spring, Army Chief of Staff General Lawton Collins contributed to this false sense of preparedness by a report of new weapons, an optimism which was shattered in the realities of Korea. Now, in a published interview (February 5), he acknowledges that the first need is to modernize the Army's equipment, while he admits that American troops have been "too much road bound" in Korea, and too dependent on machines. Road-bound motorized divisions were sent into the mountainous, roadless country of Korea. To quote a well-known RIFLEMAN contributor, Gary

THE AUTHOR

Bill Shadel is well known to the shooting world through his ten years with the Rifleman (1937-1947). Now CBS Washington reporter on military affairs, Bill is also president of the Radio Correspondents of America. His long service as a radio correspondent during World War II and his knowledge of the shooting game qualify him uniquely to appraise the position of today's rifleman.

During World War II, NRA clubs and qualified instructors were responsible for the marksmanship training of approximately 1,750,000 persons.

Underhill points out in "Look" magazine, February 13, 1951, in an article entitled "The Tragedy of the U. S. Army," that "our troops were disconcerted by mass infiltration tactics and guerrilla war, although these have been standard tactics in Russia and the Orient in all the wars since 1918 . . . In its concentration on material strength, the military had neglected the human element. Combat fatigue was abnormally high, a sure sign that men were unready for combat. Worse still, the military mind had bred the idea that only with the help of super weapons can we meet forces that outnumber us."

What does all of this have to do with the RIFLEMAN reader? I can hear it now . . . the complaint that this type of reading belongs in the military journals. My answer is that it has everything to do with you, the hard core of America's lingering interest in guns and shooting and the great outdoors . . . the adherents to a belief that the rifleman in war is still a final, determining factor of human resistance. Consider yourself the representative of what might still be called militia . . . not necessarily the man standing by with a trusty rifle, awaiting the call to arms . . . but the apostle, however, of the old spirit of a militia. Call it individual preparedness. *This is the preparedness which must now be encouraged among the boys who are about to be drafted.* There's a crying need for just such preparedness. And there's a broad background for it in our own fraternity. Rifle marksmanship is needed to instill that essential confidence of the young soldier in his weapons and, for lack of a better term, woodsmanship that's needed today in Korea.

Let's admit that we have become largely a nation of urbanites, dependent on machines and a proximity with our fellows. Even the farms have been caught in this dependency. Their isolation has been removed. But there remains an exception to this generality, in the group that still takes to the woods and the mountains, however briefly. And here is basic training in which the shooting fraternity constitutes a fount of knowledge and information.

American soldiers, trained in formal tactics, are afraid of the dark, as infantile as that may sound! They are afraid of the woods, afraid of the terrain. They shun night attacks. They have shown themselves vulnerable to infiltration, encirclement, which in Oriental or even Russian tactics happens mostly at night. Even the Marines, with their training in anticipation of these tactics, had to learn some hard lessons from Guadalcanal and Tulagi.

It's only fair to say that there is a real question as to how much can be done at the moment to encourage the art of the hunter in those about to be drafted. There should be much satisfaction, however, in the sense of encouragement and training already passed along to these lads by you, the fraternity . . . even though it was done, most likely, for recreation and in the spirit of evangelism which goes with any hobby, in wanting to make new converts and to share with the younger generation in a wonderful sport.

Universal service and universal training appears to be the inescapable prospect for a whole new crop of American teen-agers. *And there is time to reach this younger group!*

The value to the infantry of a selectee already trained as a civilian rifleman has been pointed out by a well-known Army instructor, R. C. Andrews. "Unfortunately," he wrote of a group during World War II training, "not one of 1400 appeared to have had any previous training. Had I found any, they would have been singled out immediately as my assistants, and they would have been wearing a non-com's stripes about as soon as they finished their recruit drill. A trained rifleman will learn his duties quickly, will handle himself well around the gun, and be quick and alert as a member of the crew.

These things are not new to RIFLEMAN readers. But they need re-stating . . . and especially now. For we face a new draft policy, which appears certain eventually to include 18-year-olds. What's more, we face the possibility of a lot of "brush fires" where the Communists would seek to pick off our troops piecemeal. Small wars on distant fronts are a commonplace in history. As one writer points out, there certainly should be some significance in the fact that Russia, since Peter the Great, repeatedly has used wars of limited objectives as instruments of national policy. It is therefore not only a preparation for a great, all-out war, although even in such a war there are the flanks referred to earlier, but for more of the kind of thing we're already facing in Korea. And here once more it's the doughboy in his magnificent loneliness, depending on his rifle, his confidence in it, his woodsmanship, and himself.

And so it comes time once again to lay aside the selfish interests. That can be an ugly word, although it's not as we're applying it to the RIFLEMAN clan. A selfish interest is as human and probably as fundamental as 'the pursuit of happiness.' What we choose to call the selfish interests of the clan of shooters becomes, in time of emergency, an invaluable national asset . . . providing it is turned once more to the national interest. What greater gift could we possibly bestow on the soldier-to-be than confidence in his weapon, and the ability to use it. And, unless all indications are to the contrary, that weapon will continue to be a rifle, in the hands of an American doughboy. ♦♦♦

A UN patrol plods through deep Korean snow. (All photos from Wide World)

"MAXIMUM PRESSURE"

BY AL BARR

I DON'T LIKE to beat around the bush, but there is one question to which I always give an evasive answer. Unfortunately, it has been asked of me hundreds of times. "What", people want to know, "is the maximum pressure my rifle will stand?" The reason for my refusal to answer such a question should be obvious to anyone who knows anything about firearms.

Most shooters know that 'pressure' is simply an indication of the force generated inside a cartridge at and immediately following the instant of firing. Many of the older black-powder cartridges, for instance, develop maximum chamber pressures of something like 25,000 pounds per square inch, and the old guns were designed to afford a reasonable safety margin for such pressures. Today's cartridges are more apt to be in the fifty-to-sixty-thousand-pounds-per-square-inch class. Our modern rifles are designed and built accordingly. In each instance, there is a figure called "maximum pressure", which (theoretically) is the greatest internal pressure with which that particular rifle is considered safe.

The average shooter understands that maximum pressure is important and should be approached cautiously. However, so many things must be considered when maximum pressure is mentioned that a specific "maximum" load cannot be recommended by anyone who has not had a chance to examine and shoot the particular rifle about which the question is asked. For instance, other things being equal, a rifle barrel having sub-diameter bore dimensions may increase pressure to an unsafe point. There is no way for a barrelmaker to turn out every barrel of one caliber with exactly the same internal dimensions. Therefore, if there were only .002-inch difference in groove diameter of two different rifle barrels using the same cartridge, the smaller barrel would give higher pressure than the one of larger dimensions using the same load. Even if used on the same action, both barrels would have to be tested to learn the maximum permissible load for each barrel-and-action combination. So where does that leave you in the matter of action strength?

Why anyone should want to reach "extreme maximum safe pressure" in any rifle is beyond common-sense reasoning. It has been proved many times that loads a few grains under so-called maximum pressures usually give the best accuracy. Certainly, accuracy is the one thing a shooter desires from a rifle. A matter of fifty to one hundred feet per second more velocity, in order to reach extreme maximum, will not only cause inaccuracy but will expose the shooter to dangers which are not warranted by any additional benefits.

Too few shooters realize that the maximum safe load for any rifle is largely dependent on one thing—the strength of the brass cartridge case. *The cartridge case is the weakest link when it comes to pressure.* Given the finest of cartridge cases, an experimenter can work up loads to develop 60,000 pounds of pressure or more and consider them safe in a rifle. Given the same rifle with faulty brass and the case may go at 50,000 pounds pressure or even less.

When a cartridge case lets go, damage may occur in the best of rifles. The escaping gas is likely to bulge the magazine well, snap the cocking piece, and split the stock. This is where hardness of action enters the picture. If the action is properly hardened, damage arising from a ruptured cartridge case will usually be minor. If, however, the action is brittle, the sharp blow of powder gases escaping at extreme pressures may be enough to smash the receiver and injure shooter.

One of the reasons why Mauser actions do not often blow up is that most of them are soft—sometimes quite soft. When the old Springfields are wrecked it is usually because the cartridge case goes; so long as the cartridge case holds and the headspace is correct they will stand as much pressure as any other gun. If the headspace is not correct, and the receiver is brittle, the locking lugs may slam to the rear with enough force to smash the receiver.

The safety of the cartridge case depends upon the quality of the brass. It also depends upon how much expansion of the case occurs when the cartridge is fired. In an over-size chamber, a weak cartridge case is liable to rupture when the pressure is only moderately high. Good brass, however, can be used safely in oversized chambers even with heavy loads. I have proved it to my own satisfaction by accidentally using an oversized bullet and a full load of powder in my .270 rifle. The cartridge case expanded at the base, the primer pocket increased noticeably in size, the bolt had to be driven open, yet the case held and so did the rifle.

The safety of the cartridge case also depends upon how well it is supported at the base. There is no question about the Remington 721 and 722 being ideal since the entire cartridge case is supported in the action, and it is given no chance to let go. That is why the action is considered so strong. Actually, it is not as much a matter of theoretical "strength" of the action as it is of the support given to the cartridge case by the action. Next in order of support given the cartridge case are the 6.5-mm. Jap and the model 1898 Mauser. The Mauser is made with the back end of the barrel square and the bolt fitted rather closely to it, therefore the weak part of the case, just forward of the solid head, is well supported. The same is true with the Jap rifles. Springfields and Enfields are the worst offenders since they have a tapered cone at the base end of the barrel which leaves a considerable area of the cartridge base exposed. That condition, coupled with too much headspace, offers an excellent chance for the case to rupture with excessive loads.

A soft rifle receiver will not be wrecked as readily with a blown case as will a hard one. The ideal hardness seems to be around Rockwell 40 C. Many Mausers run down to 30, 20, and even 15 Rockwell C, indicating that they are on the soft side, which is why they are not wrecked. The Springfields made at Springfield Armory with low serial numbers (below 800,000) and those made at Rock Island Arsenal (numbers below 285,507) are a different story. Heat treatment varied and some of them are quite brittle and shatter easily. A terrific blow, such as that caused by a ruptured cartridge case, will shatter them like glass. The same is true also of the Enfields made at Eddystone Arsenal, some of which have a Rockwell hardness which may go as high as 45 or 50 C. The Winchester and Remington make of Enfields are softer and I have never heard of one of them being blown up. Of the two service arms, the Enfield has a stronger action than the Springfield.

(Continued on page 36)

New York State is attempting to prevent hunting accidents before they happen! Is this novel experiment in hunter education a possible solution to the problem of gun accidents among our 13,500,000 licensed hunters?

Training the Junior Hunter

By John S. Rose

EACH YEAR sees a new crop of proposals aimed at "testing" the proficiency of hunters in much the same manner as is done with automobile drivers. Proponents of such measures always seem to overlook the obvious. Automobile license examinations have had no visible effect on our highway death toll, nor would it be practical to recruit enough examiners to check on each of this country's thirteen-and-a-half million licensed hunters! So much for that.

In 1949, however, the New York State Conservation Department gave serious thought to a *workable* variation of the usual hunter examination plan. It was decided that valuable instruction might be given by game wardens if the number of students was not too great. The conservation people were particularly interested in young students who had not had an opportunity to develop bad habits. The idea of training each year's new crop of hunters seemed to be workable because the total number of applicants in any one year would be relatively small. It also had the theoretical advantage of eventually filling the woods with men who had, at least in their youth, been exposed to safe gun-handling principles.

The original version of the New York law adopted in 1949 required that all youngsters under seventeen years of age apply for their first hunting license directly to a state game protector. The game protector was then to demonstrate to the 'teen-ager the safe methods of handling firearms or satisfy himself that the youngster was familiar with such methods before issuing the permit.

In general, the system worked well. Over six thousand young hunters received their first hunting licenses from game protectors between July first of that year and the end of the season. On the other hand, many hunters of the same age missed the briefing by a game protector due to the fact that they had purchased their licenses before the law went into effect on July 1, 1949. The conservation department reported that of these untrained hunters, 17 were "involved in hunting accidents."

New York's conservation department officials, convinced of the law's value, were anxious to develop the program to an even greater degree in 1950. The difficulty encountered in 1949 had been a lack of free time in the daily schedule of game protectors, particularly during the late summer and fall when most of the instruction was to be given.

It was here that the National Rifle Association entered the picture. Certificated instructors of NRA-affiliated clubs in New York State were invited to take over as much of the training as they could handle. Their response was generous and enthusiastic.

On February 21, 1950, a bill submitted to the New York State Senate carried the specific provision that National Rifle Association instructors be authorized to train and qualify young hunters for licenses. The bill met with no opposition in either house and was signed by Governor Dewey on April 10.

As soon as the law became effective, nearly three hundred instructors offered their services to the NRA junior hunter program. In most cases the use of range facilities was included in the offer, along with privately-owned rifles, spotting scopes, and other training aids. Although this response was gratifying, it became clear that many more junior hunter schools would be needed if a satisfactory beginning was to be made. An appeal was sent to all NRA club officers, asking that they nominate as instructors those adult NRA members who possessed the experience and ability to conduct the training

involved. A total of 632 instructors volunteered and conducted classes for 3,052 young hunters in New York State last fall.

A great deal of time was devoted to the preparation of the training course. It was decided early that the emphasis would be placed on the development of safe and practical gun-handling techniques instead of on precision target shooting. Reference to the NRA's file of hunting accident case histories controlled the division of time among the various phases of training.

Classes were held in some instances on Saturday when the entire four-hour course could be covered in one meeting. Where it was not convenient to conduct classes on a week-end the students met for two hours on each of two nights. Parents generally were favorably impressed, and provided transportation and listened-in on the classes with great interest, afterward expressing the wish that they had 'had something like that in their youth'. Along with teachers, school principals, and nearly all of the instructors, the parents believed that the course outline—consisting of an introduction, gun handling in the group, brief range practice, discussion of weapons and ammunition, safety in the field, the game code and good manners, and the final examination—was well organized.

Disciplinary problems never seemed to develop. The boys were in almost every instance anxious to learn and to make as good a showing as possible. The instruction was so appealing that they usually remained long after the examination. Frequently the instructors had to shoo them home from lengthy gun-lore bull sessions. Many of the more likely prospects carried home invitations to join the sponsoring club as the result of their initial contact with the shooting game.

Some of the most successful classes were conducted by high school principals and teachers who became interested in the program. These instructors had a natural advantage in knowing the students personally and having ample opportunity to schedule classes in the most convenient manner possible.

In addition to the all-important certificate, all graduates of the course were awarded yellow-and-black felt brassards embroidered with the words "NRA Junior Hunter". The little felt patch was usually worn with a genuine sense of responsibility and accomplishment.

The youngsters who graduated from these classes were extremely conscious of being observed and measured by adult hunters—and by adult standards. In Steuben County, while hunting deer during a record-breaking snow and wind storm, I observed a cold and obviously tired boy as he approached my place of concealment. As soon as my glasses picked up the yellow Junior Hunter patch, the young hunter and the entire instructional program were unknowingly taking another examination. His twelve-gauge single shot rode easily in the cradle of his left arm and, until he turned towards me and the old wire fence separating us, I was afraid that his training would go untested.

The top strand of the fence hung so that it could easily be stepped over. This he started to do with the gun held carefully in his right hand. After a moment's hesitation the youngster changed his mind and plowed through the powdery snow to the next fence section, where the shotgun was securely positioned with the barrel wedged between the bottom strand and post. After. retracting his steps and crossing fifteen feet away he recovered the weapon without allowing the muzzle to threaten him for an instant. At no other time during the entire trip was an adult hunter observed to use such precaution or to handle a firearm with such obvious pleasure in having gun know-how.

Apparently this was no isolated instance giving an untrue picture of the New York experiment. The big test took form in the bundle of official Uniform Hunter Casualty

This instruction group, sponsored by the Ticonderoga Fish & Game Club, was typical of many "how-to-shoot" classes held as a part of the program

Report forms received by the NRA from the New York State Fish and Game Division. It is regrettable that seventeen hunters between the ages of fourteen and seventeen were reported as being involved in hunting accidents, *but none among them was a graduate of the NRA Junior Hunter's School.*

Admittedly, no educational program such as this will entirely eliminate hunting accidents. However, education does pay off. That initial ratio of seventeen accidents among non-graduates of the New York schools against none reported among participants in the program is heartening evidence of its value.

The moral, as far as other states are concerned, is obvious. The NRA's network of 3,000-plus senior clubs offers a ready-made basis for the initiation of such youth-training programs throughout the country. The materials—instructors, ranges, weapons—are at hand. All that is needed to snowball the program into the biggest contribution yet made to safety in the hunting field is the cooperation of forward-thinking men in our state legislatures. ♦ ♦ ♦

Both instructors and "graduates" may wear distinctive insignia

"Maximum Pressure"

CONTINUED FROM PAGE 33

The question of maximum pressure comes up frequently when shooters ask for reloading data. Not content with an accurate load, they ask for the maximum load also, apparently in the belief that someone can give the charge which will be the safe maximum in their rifle. How can anyone have enough information on someone else's gun to tell him the maximum charge for it? If we must go to a maximum charge we do it experimentally by loading in one-grain steps. We select what is considered the approximate maximum powder charge for the rifle and bullet, cut the load four to five grains, and then work up by increasing the charge one grain at a time to a load which shows signs of pressure. Pressure signs on a primer are only a relative indication and can be misleading, although they should not be ignored. If, for example, with a strong mainspring and proper headspacing, a flattened primer occurs and the metal crater around the firing pin hole is misshapen you have a good indication of high pressure, providing the firing pin fits the hole in the bolt face properly.

Another definite indication of high pressure which anyone can check is expansion of the solid head of the cartridge case just forward of the extractor groove. When the head of the cartridge, after being fired in a Springfield or Enfield, expands as much as .003 inch, the load is excessive. An oversized chamber will also cause considerable expansion there, up to .005 inch. With any expansion over that, you can run int trouble. Unless your cartridge case is strong and sound, exce sive expansion may cause it to let go and start trouble.

To sum up, the Remington 721 and 722 rifles are "strong est" because of the way the cartridge case is supported i the action. Second in strength are the Mausers, because of th way the cartridge case is supported, the Enfields (with th exception of the occasional brittle Enfield of Eddyston make) and the Winchester 70. It is a known fact that th hardness of the Springfield varies considerably, so the strengt would depend somewhat on the hardness of each individu action. In this respect, the Springfield and Enfield have weakness when headspace conditions are present because the cone-shaped breechend of the barrel.

It all boils down to the fact that if you want to know ho much pressure your rifle will stand, you must know the qu ity of the brass in the cartridge cases, how much the cartrid case expands at the back end, how hard the receiver is, a what the chamber and bore dimensions are. With these f ures, a reasonable answer can be given. Seldom can anyo give all of these figures, however, when asked about ma mum pressure. This is why our answer to the question how much pressure a certain rifle will stand is evasive a will be for a long time to come. ♦ ♦

HIRAM BERDAN
CHIEF OF THE SHARPSHOOTERS
(Continued from page 13)

and trust that this intelligence will encourage your men, and give them, if possible, steadier hands and clearer eyes so that when their trusty rifles are pointed at the foe there will be one rebel less at every discharge."

During the Yorktown siege a Sharpshooter detail brought down an enemy observation balloon which was made out of an "A" tent. Fortunately for General Porter the enemy riflemen were not as skilled in this type of shooting. If they were, Porter would have become either a corpse or a prisoner the day he inadvertently floated alone across the rebel lines after the ground rope on his balloon had parted and set him adrift. A group of Sharpshooters rescued the abashed leader.

In every organization there is a "character". In the Sharpshooters the man in this role was a grand old shaggy hunter from the west named Truman Head. "California Joe", as he was called, was a superb shot, and his exploits as a scout were reported frequently in the papers of the day.

Berdan or some general would say, "Joe, there's a reb across the way being a nuisance. Can you get him?" Joe's response was to pick up his Sharps and some ammunition and go to some forward vantage point from which he could observe the nuisance and silence or drive him away. Long shots, at 600 to 800 yards distance, were his specialty; he never failed in his mission, according to contemporary reports. He did his job and then ambled back to his lines or into camp where he cleaned his rifle and quietly resumed whatever he had been engaged in when summoned. Contrary to popular belief, he was not the wild-eyed lion hunter some stories suggested, but a gentle and modest person whom everyone loved. Joe became cantankerous only when he came upon exaggerated tales of his own shooting, like the *Harper's Weekly* article of August 2, 1862, which credited him with picking off a rebel at 1,500 yards with his Sharps rifle!

Berdan taught his men to take advantage of every weakness and miscalculation of the enemy. On one occasion they noticed that the nose of a cannon opposing them protruded from between and beneath closely-packed sand bags. Their target rifles picked at the bags just over the muzzle of the big gun, and soon sand began to striggle into it. As the thirteenth cannon shot was fired, the choked gun burst.

Despite their many engagements and frequent assignments in the forefront of attacks, Sharpshooters losses were lower than those of numerous other organizations. This was probably because they were trained to take full advantage of every type of cover offered, and because, having breechloaders, they could lie low and without changing position reload and fire ten shots a minute.

The usual light marching gear of the skirmishers included the nine-pound Sharps and sixty rounds of linen or skin cartridges. Of the latter, forty were carried in cartridge boxes and the remainder in the knapsack. When committed to a particularly rough action, as at Gettysburg, every man had one hundred rounds of ammunition.

In the Second Battle of Bull Run, both Sharpshooter regiments were in action for eight days. Here the 2nd Regiment was highly complimented by General McDowell, who referred to it as "a valuable regiment, much exposed."

A shell wound in the breast which Colonel Berdan received at this battle on August 30, 1862 ultimately forced his resignation from the service more than a year later. He suffered recurring hemorrhages from the injury. During that August also, the 1st Regiment lost a fifth of its personnel present for duty, and the 2nd Regiment was reduced by the enemy from 650 to 127 men. Before the Sharpshooters' entrance into the fight at Antietam, considerable recruiting was carried out to fill the vacancies.

California Joe, as depicted in the August 2, 1862 issue of "Harper's Weekly"

Colonel Post, commander of the 2nd Regiment, was wounded at Antietam in September 1862 when 40,000 Confederates clashed with 55,000 Union troops. In this bloody affair Berdan's men were held in reserve. The 2nd Sharpshooters were "in the scrap hot and heavy", and lost 66 men killed and wounded.

During their respite in winter quarters at Falmouth, Virginia, a "Grand Shooting Match" was held by both Sharpshooter regiments. It was an elimination contest in which company champions vied for regimental prizes, and the regimental winners shot it out for the brigade title.

In the final shoot-off, a Michigan man from Berdan's regiment won the offhand 5-shot 100-yard match with the open-sight Sharps rifle. Another event consisted of firing 3 shots from a tree-top perch at a bullseye 200 yards away. A New Hampshire man from the 2nd Regiment won the $10 cash prize for this.

Colonel Berdan had recovered from his wound temporarily, and was in good enough condition to fire several 1,000-yard demonstration shots with both the Sharps and a target rifle, and then win the jumping contest!

Back to the front went the Sharpshooters early in 1863. Maj. Gen. Daniel Sickles, commander of the army corps to which the Sharpshooters were attached during the battle of Chancellorsville, was much elated by the manner of their assaults. "These splendid light troops rendered the most effective service", the General reported afterward. For his "gallant and meritorious services" given here, Berdan was brevetted a brigadier general after the Civil War.

Credit has been given the U. S. Sharpshooters for "turning the tide at Gettysburg in favor of the Union cause", as one Confederate leader put it.

At Gettysburg, 100 men out of Berdan's regiment, which was protecting the left flank of General Sickles' corps just off Little Round Top, were sent out on reconnaissance (at Berdan's suggestion and with his leadership) to learn what General Robert E. Lee's forces were up to behind a woods a mile and a half away. About 200 men of the 3d Maine Regiment went along as a support group. Capt. C. A. Stevens, official historian of the Berdan Sharpshooters, reports that the following action then took place:

The Sharpshooters drove back some rebel skirmishers and then ventured through the woods and came face-to-face with General Longstreet's three columns of 30,000 troops getting ready to attack. Berdan sent a warning back to Sickles and then directed his 300-man reconnaissance party in such a fierce and accurate flanking fire of rifle balls that the Confederate corps was delayed 40 minutes—just long enough for General Meade to readjust his disposition of Union troops and foil the enemy's attempt to take the two Round Tops, the hills which were "the key to the situation."

Colonel Berdan's horse was shot from under him. Throughout the action he displayed great bravery and leadership ability. His men practically exhausted their ammunition, firing 95 shots each in a 20-minute barrage.

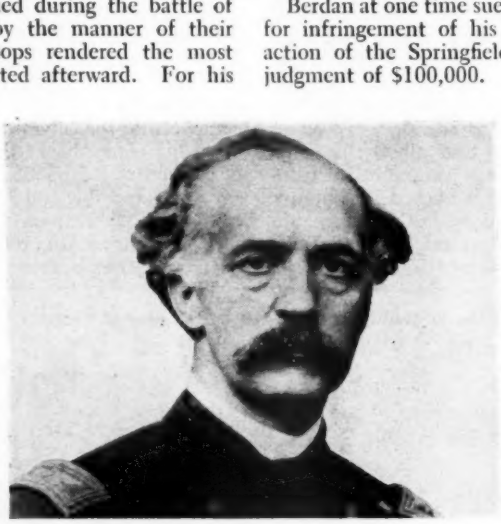
The 2nd U. S. Sharpshooters, covering the ravine between the Round Tops, fought off a superior force of the 15th Alabama Regiment and captured many prisoners, thereby contributing much to the security of the Union line in this critical area.

Berdan's earlier wound, aggravated by several strenuous periods of duty, caused severe complications, and he was absent sick for five months after Gettysburg. On January 2, 1864, he was honorably discharged for disability. The Sharpshooter brigade he had developed and guided so effectively up to that point continued to serve valiantly throughout the war, earning many honors and compliments from leaders of both Union and Confederate commands.

After a period of recuperation, Hiram Berdan resumed his efforts as an inventor, having his workshop in New York City. He devised improvements in firearms, probably the first being his conversion of the Springfield musket to a breechloader. Then he invented a cartridge primer which was adopted throughout the world and still bears his name.

Among his many ideas patented after the Civil War are these: a gun wiper (a device for cleaning the bore); a breechloader of the sliding-bolt type (British patent No. 1200); an improvement in breechloading firearms involving a detachable firing-pin point; a time-and-distance fuse for artillery shells; a method of operating submarine guns (torpedoes); and ammunition for submarine guns. Berdan's telemeter (range-finder) was the subject of lengthy study by the Army Ordnance Department in 1879.

Berdan at one time sued the U. S. Government for $500,000 for infringement of his patent on an improvement in the action of the Springfield breechloader, and was awarded a judgment of $100,000.



Matthew Brady's photograph of Berdan

Hiram Berdan, now a brigadier general by brevet, spent several years in Russia supervising the manufacture there of what became known as the Russian-Berdan rifle. A number of these pieces was made for the Russian Army, and the American inventor received considerable money therefrom.

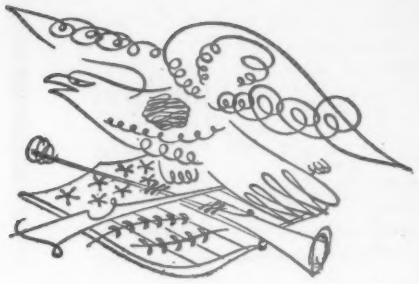
A .42 caliber Russian-Berdan rifle was among the proposed government arms tested by the Ordnance Department at the National Armory in Springfield, Massachusetts, in 1872-73. It reached the semi-finals in the exhaustive trials which resulted in the Army's adoption of the 1873 .45 caliber Springfield. The records of these grueling tests reveal that of the 99 American and nine foreign rifles examined several used Berdan cartridges.

During his last few years, General Berdan devoted much time to the design of his "Iron-Clad Destroyer" and its attempted sale to the Navy. This was to be a 260-foot semi-submarine, an armored-deck vessel lying close to the water. It was intended to carry a hydraulic ram at its prow at the water line, and an under-water gun tube beneath the ram from which a 500-pound shell was to be discharged into the hull of the enemy ship. Berdan guaranteed success; the range of this shell, which had a delayed-action fuse, was only eight feet!

Death came to this remarkable soldier-inventor in Washington, D. C., on March 31, 1893. He was playing chess at the Metropolitan Club that afternoon with a naval officer when he was taken by cerebral hemorrhage.

The Arlington National Cemetery became his final resting place. A broad and sturdy bronze tablet marks the site of his burial, within 100 yards of the Lee Mansion and on the crest of a grassy slope overlooking the Potomac River and the Nation's Capital. ◆ ◆ ◆

The NRA and Civil Defense



Firearms legislation has become an issue in state civil defense plans after several local defense leaders asked for registration of weapons. Early last month the National Rifle Association, to combat such false thinking, made public through the Associated Press a letter from Major General Merritt A. Edson to all state civil-defense directors in the United States. In his letter, National Rifle Association president Edson warned "that any attempt to register firearms in the United States would be playing into the hands of fifth columnists."

Said Edson: "At first glance, it seems a good idea for any civil defense director to know who owns guns in his state." He pointed out, however, that "such registration will contribute nothing to the defense of your community and may serve as a dangerous boomerang." Therefore, he continued, "we sincerely and emphatically urge you to eliminate any reference to privately owned firearms from your civil-defense questionnaire."

Reasoned Edson: The list will find its way into the hands of fifth columnists, and "the accepted fifth column technique calls for raids on the homes of citizens who possess firearms. Such raids may be in the form of burglaries, in order more adequately to arm the fifth column group while at the same time reducing the ability of the citizens of the community to defend themselves."

Furthermore, Edson went on, knowing the whereabouts of privately-owned firearms is not in itself of great value. He observed that "a gun in untrained hands is a menace to the man who holds it and to his law-abiding companions. But it is no menace to the law-breaker or subversive agent."

Edson suggested that state civil defense directors should ask: "Are you thoroughly familiar with the safe and accurate handling of firearms and, if so, will you volunteer as a member of your local auxiliary police group." In other words, Edson pointed out, "What you need to know is not *where* the guns are, but where the men are who are capable of properly using guns and are willing to become a part of your civil-defense organization."

Release of the letter caused considerable controversy. Several newspapers commented editorially, both pro and con. On the other hand, General Edson (who is also civil defense director for Vermont) had received twenty-four answers from other state civil-defense directors when this issue of the RIFLEMAN went to press. All of these replies indicated complete agreement with the conclusions presented by the general, and promised elimination from civil-defense questionnaires any reference to privately-owned weapons. Here are quotations from letters received from civil-defense directors throughout the country:

"I agree with your viewpoint completely."—Col. Philip Doddridge, Director of Civil-Defense, Idaho.

"I can guarantee that Minnesota will not entertain the idea now or in the future of registration of private firearms or the use of the general run of American citizenry to engage in policing by mob action."—Col. E. B. Miller, Minnesota Civil Defense.

"As a matter of interest to you, I had been on the point of including a provision for the registration of private firearms and for the strict control of both the firearms and their ammunition but, after hearing the viewpoints of quite a number of responsible people here in New Hampshire, it was decided to strike any reference to private firearms out of the legislation and limit the control measures provided to explosives other than small arms ammunition."—Miles R. Browning, Rear Admiral, USN (Ret'd), New Hampshire Director of Civil Defense.

"The New York State civil defense commission has no intention whatever of going into the problem of privately-owned firearms."—L. Wilkinson, Director, New York Civil Defense.

"Let me assure you that I am just as interested as you and your organization are in preventing the listing or registration of private firearms. No one has thus far even suggested to me that it might be a good idea to conduct such a registration."—Major General Ralph J. Olson, Wisconsin Director of Civil Defense.

These statements by the directors of state civil defense are echoed by the Federal Civil Defense Administration, which has joined with the National Rifle Association in actively opposing any attempt to compile control lists of privately-owned firearms in the interest of civil defense. ◆ ◆ ◆

Legislative Bulletin

(Continued from page 27)

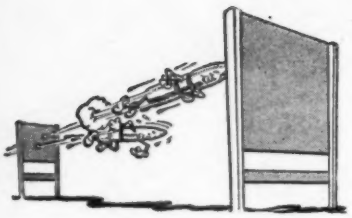
Pennsylvania: House Bill 306 by Representative Duffy of Philadelphia County requires registration of all firearms with heads of police. *Action:* None reported.

Tennessee: House Bill 208 would provide a comprehensive game and fish law for the state. It would give authority to the game department to confiscate firearms and equipment, including automobiles and boats; to sell same at public auction; to hear appeals and to place the proceeds of fines and public sales in the General Game and Fish fund. *Action:* None reported.

Washington: Senate Bill 27 would provide that it should be unlawful to have or to carry any loaded shotgun or rifle in a vehicle, provided that shells or cartridges may be carried in the magazine. *Action:* Referred to Judiciary Committee.

West Virginia: House Bill 59 would exempt persons going to or shooting at organized gun clubs or ranges from Sunday ban on carrying or shooting fiearms. *Action:* Referred to Judiciary Committee.

Wyoming: House Bill No. 124 by Johnson and Lees would prohibit the carrying of a shotgun or rifle from which all shells and cartridges have not been removed from the barrel in or on any motor vehicle or on any road open to use of the public. *Action:* Referred to Law Enforcement Committee. ◆ ◆ ◆



WHERE THEY HIT!

A Comparison of .30-Caliber Wildcats

BY ROBERT HUTTON

NOT TOO MANY years ago a certain wildcat cartridge based upon a reduction of the .300 H. & H. Magnum case was tested with carefully handloaded ammunition. The result was poor accuracy, punctured primers, stuck bolts, and ruptured cases. When the load was lightened and the powder changed to a faster-burning one, accuracy improved and it seemed that everything about the rifle—and the $700 it had cost the owner—was sweetness and light.

But then we tested this rifle and load at 300 yards, after it had been zeroed for exact point of aim at 100 yards. The rifle was a .25-caliber wildcat, and it was then proved that with this lighter load (60 grains of duPont 4320 powder) the drop figures were exactly what the Winchester handbook says a .25-35 should give! Also, there were numerous hangfires.

Well, in more carefully-made rifles, with the neck of the cartridge case slightly lengthened, and emphatically with more knowledge of the versatility of modern rifle powders, that particular .25-caliber wildcat shares with a similar cartridge a place among the flattest-shooting rifles being tested by experiments today.

Several years have passed since those early tests with large cases which had been reformed by blowing out so that they would hold more powder, but there still remained, until about a year ago, too many doubting Thomases—gentlemen interested in testing cartridges—who formulated their opinions on the basis of at least one bad experience.

On the other side of the ledger were experimenters who had chronographic reports and successful big-game hunts to back them up. But even they did not know why, for some reason or other, some bullets suddenly seemed to go into nose-dives at 400 yards and hit lower on a 500-yard target than identical bullets in other cartridges with smaller powder capacities. Obviously the experiment of returning to the chronograph could be of no help here. Experiments with different barrel-twists, or bullets of different shapes, seemed to be the only clue, and these could be tested only by careful shooting with high-powered scopes from well-made bench rests, under good shooting conditions.

To answer some of these questions in terms of actual shooting, experimenters from all over America were chosen about two years ago to test their .25-caliber wildcats. Thirteen cartridges were represented, all zeroed for point-of-aim at 100 yards, then fired in five shot groups at 200, 300, 400, and 500 yards. Groups and drop figures were then measured. Everyone used 100-grain Moffat bullets. Roy Weatherby's .257 Weatherby Magnum led the field in combined accuracy and flatness of trajectory, but some of the other cartridges produced fine results, too. The results of those tests were published in the November 1949 issue of the RIFLEMAN.

It was decided later to try the same tests, this time with the .30 calibers. Here they are, with results on the following pages, and with interpretations by the shooters themselves whenever they could be obtained. Again Roy Weatherby's rifle—this time his .300 Weatherby Magnum—has topped the list on flatness of trajectory, or drop. Three separate tests were made by two shooters to see if there could be any appreciable error at 500 yards. Weatherby fired two of the tests and the author was asked to check the rifle and cartridge at 500 yards. While I did not get quite as flat trajectory, note that it was just one minute-of-angle higher than Roy's, or 33½ inches drop. And I fired at least 15 shots first at 100 yards to be sure that the zero at that distance was perfect.

Just what does the shooter learn by participating in this type of drop test? Particularly, what does the hunter or target shooter learn by studying reports from tests of this sort? The pure ballistician, or engineer, will tell you he can figure out all these matters by slide rule and chronograph.

If this is true, why do the manufacturers, who print drop figures in their catalogs, tell you to consider their figures relative, and by all means to make similar drop tests with your own rifle? That is because no figures obtained by the slide-rule can be regarded as absolute because of the variables necessary when a man goes out to shoot his rifle. By the same token drop figures such as we are publishing herewith cannot be regarded as absolute or as a definite means for learning velocity, or to present a certainty that another rifle, shooting the same cartridge, with the same load, will shoot into the same minute-of-angle group. Also the same shooter will not be capable, even with the best scopes and bench rests, of firing with the same degree of accuracy every time he sets out to the range with a block of ammunition. Sometimes his groups are lucky; often they go sour. But I do think that when shooters have produced rifles and ammunition capable of twenty-five shots at five distances, all within a minute-of-angle, as some of them have, that we have found a real contribution to the technique of shooting, the handloading of ammunition, and the assembly of rifles. Add to that the extremely flat trajectory that has been recorded on their targets—at distances measured by a licensed surveyor—and you have some of the finest results man has yet attained in exercising his American prerogative of designing his own cartridges and shooting his own guns. If we were compelled to stop testing rifles after the chronograph had done its duty—and this is no complaint against the chronograph—it would be a form of birth control applied to ballistics!

Here, now, are the detailed results:

.30 WCF (.30-30)

Cartridge: Standard.

Load: 40 grains of 4350. (Excessive load in all rifles chambered in this caliber of current manufacture.)

Rifle: Model 54 Winchester, standard barrel, 12 inch twist; Lyman Alaskan scope plus 8-power Litschert attachment.

I had no idea of including this archaic caliber in the test; but I found a chap with a Model 54 Winchester who offered it to me, and I could not resist the temptation. The load above was tested by Al Barr and was chronographed and pressure-tested with the 180-grain Peters belted bullet. It has the flattest trajectory that I know of with the .30-30 cartridge, but please note that it is not the way to load a model 94

carbine, a Marlin, or any of the .30-30's of current manufacture. With this rifle, I made comparative tests with all of the other duPont and Hercules slow-burning powders, and even with some of the time-tested loadings recommended for the 150-grain bullet by duPont, but the above test proved to be the most accurate as well as the flattest shooting.

Unless you have a Model 54 Winchester or a strong single-shot rifle, don't try this load. Pressure is 48,000 pounds.

.30-40 Krag

Cartridge: Standard, Super-Speed cases.

Load: 45 grains of 4350; case capacity, 55 grains of 4350.

Rifle: Model 1898 Krag, with .3085-inch Sedgley-Springfield barrel, 22 inches long; 16-power Fecker scope; 1-10 twist; Bishop stock with target-height comb.

The shooter was Hilding A. Tegner, Santa Monica, California. He states: "I tried all of the recommended Krag loads for the rifle, and at least a dozen tests were made with reasonably accurate 100-yard loads at 300 yards also, to check the drop. I think 4350 is the right powder for this cartridge, and Al Barr's tests have indicated that I am still under 40,000 pounds, which is a factor the chap with a Krag should remember. Incidentally, on the day of my final test, the wind blew to beat hell!"

.300 Savage

Cartridge: Standard cases, handloaded with 45½ grains of duPont 4350; case capacity, 48½ grains of 4350.

Rifle: Converted Jap rifle, with .308-inch Enfield barrel, rechambered; metallic sights with Merit disc rear; twist: one turn in ten inches.

Jack Henninger, of the Cramer Bullet Mold Company, North Hollywood, California, put this rifle together in a hurry because nobody seemed to be handy (after a two-month search) with a new Remington 722 or even a Savage model 99. The interesting part of the test is to show what the cartridge did with 4350 powder which, we seem to be learning as time goes on, is more versatile than some of the handbook boys believe.

.303 British

Cartridge: Pre-war Western Super-X cases. Load: 43 grains duPont 4064.

Rifle: Model 95 Winchester, with Redfield Olympic front (disc) and Redfield 70 rear; 28-inch barrel, 1-12 twist; groove diameter: .314 inch.

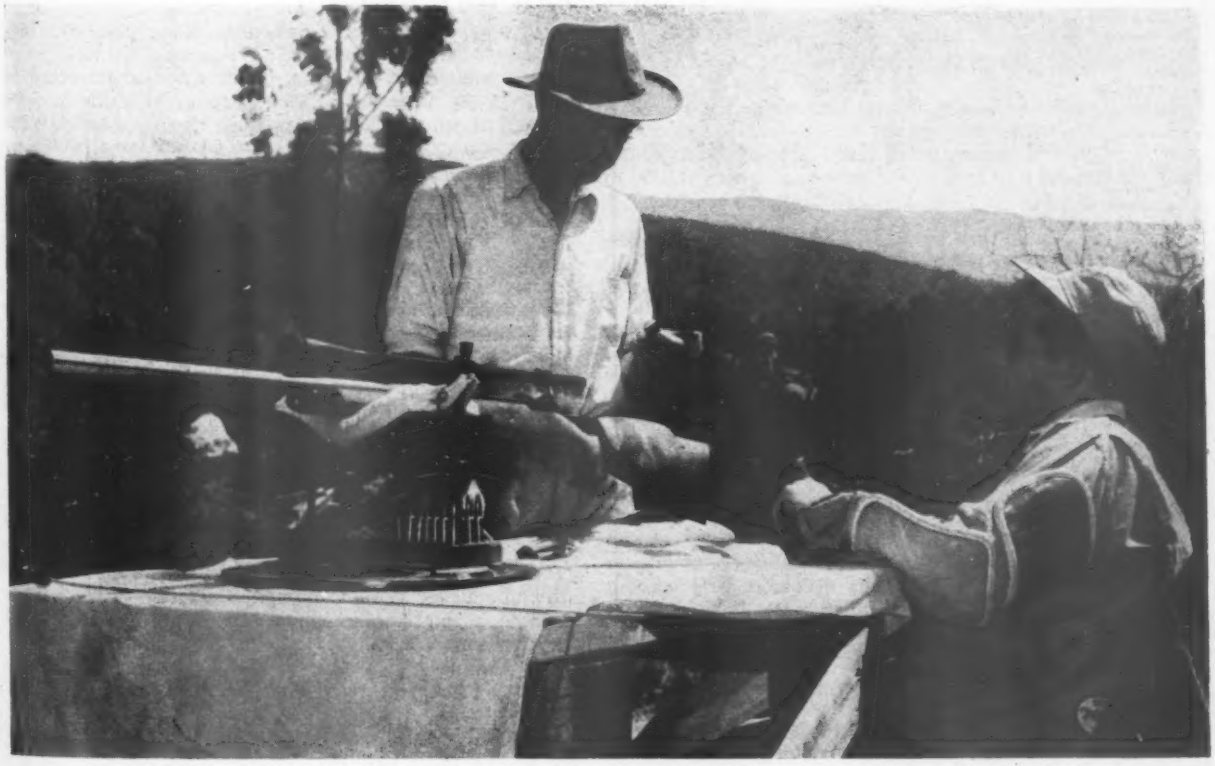
Here the composer of this libretto, one Robert Hutton, bursts into the picture with a rifle and cartridge that only vaguely comes under the .30-caliber status, simply because nobody else seemed to be interested. The author made every effort to get reasonably good 200-yard groups with the fine Sierra bullet and 4350 powder, and has two five-shot 2-inch groups at 100 yards with 47 grains of 4350. But accuracy went to pieces at 200 yards, and the tests with that powder were dropped, despite the fact that I knew of the Krag and .30-30 groups mentioned above at the time of testing. I think it would be extremely interesting for someone with a good Pattern-14 Enfield or a British Lee-Enfield to repeat the test with 47 or more grains of 4350.

.30-'06 Government

Cartridge: Standard Super-Speed cases neck-sized. Load: 58.7 grains duPont 4350; case capacity 64 grains.

Rifle: Winchester model 70 Target Grade, with 12-power Litschert scope sight. Twist: one turn in ten inches.

The shooter in this test was Carl Laughlin of Santa Monica, California, a big-bore as well as smallbore target shooter and



While the barrel cools, Arnold Juenke (right) and Robert Hutton talk about Arnold's .300 Magnum ICL cartridge

Drop and Accuracy: .30-caliber Handloads[1]

Cartridge and Load		100 Yards Drop	100 Yards Group	200 Yards Drop	200 Yards Group	300 Yards Drop	300 Yards Group	400 Yards Drop	400 Yards Group	500 Yards Drop	500 Yards Group
The Smaller, Older .30's[2]											
.30 WCF, 40 grs. 4350	0	2.25	7.75	2.82	24	7	58	10.5	89	10.0	
.30-40, 45 grs. 4350	0	1.87	3.50	4.18	18	5.62	48	13.0	83	11.0	
.300 Savage 45½ grs. 4350	0	3.0	4.40	8.0	25	11.0	54		84	22.0	
.303 British 43 grs. 4064	0	2.25	7.50	8.12	22	8.50	45	7.0	70	22.0	
The .30-'06 and Its Variations[2]											
.30-'06, 58.7 grs. 4350	0	2.06	3.25	1.89	13.89	7.10	27	5.59	50	5.00	
.30-'06 Ackley, 61½ grs. 4350	0	2.0	3.25	2.25	11.0	4.43	22	6.75	48	7.0	
.30-'06 ICL, 61½ grs. 4350	0	2.0	1.50	4.12	9.25	3.12	21	4.0	41	5.5	
The .300 H. & H. Magnum and Its Variations[2]											
.300 H.&H. 68½ grs. 4350	0	1.5	.75	4.87	7.25	5.06	17.5	6.5	38	11.5	
.300 Kempley-Fischer Mag., 74 grs. 4350	0	2.25	.75	3.0	8.0	6.37	18.0	5.37	37.0	15.0	
.300 Kempley Short Mag., 70 grs. 4350	0	1.0	1.5	2.0	9.5	5.0	18.0	5.0	39.0	5.0	
.300 Pfeifer Improved, 74 grs. 4350	0	1.31	.50	1.81	5.5	3.31	16.5	3[3]	34.5	4.0	
.300 Weatherby Mag., 82 grs. 4350	0	.87	1.37	1.81	5.50	3.50	15.12	3.56	29.37	4.50	
.300 MVF Mag., 73 grs. 4064	0	1.12	2.5	3.0	8.75	4.0	24.0		38.5	11.0	
.300 ICL Mag., 82 grs. 4350	0	.31	1.62	2.31	7.31	3.00	17.75	5.50	35.25	6.12	

(1) All measurements in inches
(2) All groups fired with 180-grain Sierra bullets
(3) Four-shot group

Comparative Tests With Other Bullets

.30-'06, 128-gr. Kirksite "A" bullet, 50 grs. 4320, Win. 115 primers	0	1.5	4.30	5.0	16.0	5.82	36	8	72	11	
.30-'06, 150-gr. M1 bullet, 49 grs. HiVel 2, FA 26 primer	0	1.5	3.0	3	9	6.0	26	6	49	10	
.30-'06 issue M2 (Denver 1942)	0	2.0	2.25	4.75	10.5	4.0	32.0	10.5	53.75	15	
.30-'06, 180-gr. Sierra bullet, 38.5 grs. 4895, lot 27272	0	2.25	6.25	3	23.0	8	58.0	8	102.0	7.25	

hunter. Laughlin fired the test after a great many preliminary experiments with all powders, and believes that the reported results are about the best to be obtained from the .30-06 cartridge with the 180-grain Sierra bullet. (Warning: This may be an overload in tight barrels.)

.30-06 Ackley Improved

Cartridge: Standard .30-06 case reformed by fire-forming; over-all length of reformed case, 2.388. Total powder capacity with 4350, 65.5 grains; load used in test, 61½ grains 4350.

Rifle data: F. N. Mauser action, Johnson 12-inch-twist barrel; 10-power Unertl one-inch scope. Scope center above center of bore, 1¾ inch. Sporter weight rifle by Bob Herzog, Shasta City, California.

The shooter was Paul Herzog, brother of the maker of the rifle, who states: "As you know this rifle held a range record just prior to the test, and produced several other groups under one inch at one hundred yards, all with maximum loads. I didn't do so well in the actual test. Must have been the wind!"

.30-06 ICL 'Caribou'

Cartridge: .30-06 standard case reformed to ICL (Improved Capacity Loading) by the Santa Monica Gun and Rod Shop, Santa Monica, California, and known commercially as the Saturn rifle.

Rifle: Enfield remodeled to bench-rest gun with heavy 1-in-14 twist barrel, for purpose of testing ICL .30 caliber cartridges of different barrel twists. 12-power Lyman Targetspot scope.

Arnold Juenke made this rifle especially for this drop test, and after it was completed he rechambered it for his .300 Magnum ICL. Among the .30-'06 wildcats, the ICL provided the flattest trajectory along with extremely fine accuracy.

.300 H. and H. Magnum

Cartridge: Factory cases reloaded. Case capacity, 78½ grains 4350; Load used in test, 68½ grains 4350.

Rifle: Model 721 Remington standard rifle, restocked by Adobe Walls Gun Shop, Santa Monica, California, with National Match type high-comb stock. Lyman Alaskan scope plus 8-power Litschert attachment. 1-10 twist.

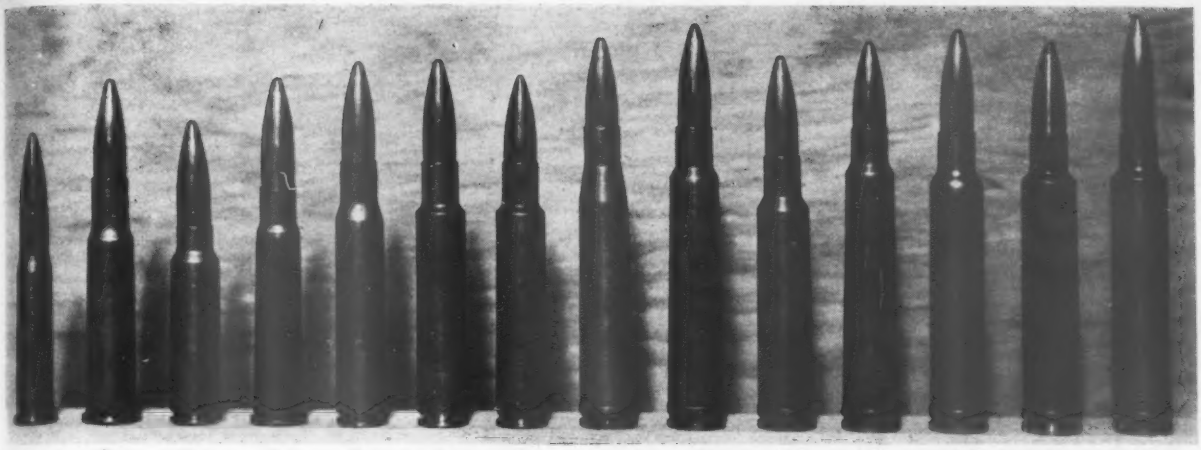
The shooter was Gene Bunstine, nationally-known small-bore coach and experimenter, with a rifle the Adobe Walls Gun Shop, Santa Monica (of which Gene is the head), had rebuilt. This rifle was selected for the test because it holds the .30-caliber accuracy record on one rifle range.

.300 Kempley Short
.300 Kempley-Fischer

The only difference between these two cartridges is the length. The second is the .300 Magnum cartridge with a 28-degree shoulder, the first is the same case trimmed to the length of the .30-06, for use in Springfield rifles. The Kempley short is really the old .275 Magnum case necked up to .30 caliber with reformed shoulder. Case capacity for the .300 Kempley-Fischer: 86 grains 4350; load in test 74 grains. Case capacity for the Kempley short, 74 grains; load in test, 70 grains.

Rifles: Winchester Model 70 and Enfield, both remodeled into bull guns for Wimbledon-match shooting (1,000 yards). Scope: Lyman 10-power Super Targetspot. Rifles weigh about 16 pounds each.

Roy Kempley, who designed and tested these two rifles, fired in the National Matches at Camp Perry and the California State matches for many seasons. Also he has lived in Alaska and hunted big game there for many years. Kempley designed the cases, had "Red" Elliott make the reamers, and the work was done by Alvin Fischer of Burbank, California.



1 2 3 4 5 6 7 8 9 10 11 12 13 14

1: .30 WCF (.30-30)
2: .30-40 Krag
3: .300 Savage
4: .303 British
5: .30-'06 Government
6: .30-'06 Ackley Improved
7: .30-'06 ICL "Caribou"
8: .300 H&H Magnum
9: .300 Kempley-Fischer
10: .300 Kempley Short
11: .300 Pfeifer Improved
12: .300 Weatherby Magnum
13: .300 ICL "Grizzly"
14: .300 MVF

.300 Pfeifer Improved

Cartridge: .300 H. & H. case; same body, shoulder fireformed to 28-degree angle (compare with Kempley's case). Overall length of reformed case, 2.85 inches; neck length, .34 inch; total powder capacity with 4350, 82 grains; load in test, 74 grains 4350.

Rifle: Winchester Model 70 bull gun, with 6-groove Pfeifer heavy barrel; Lyman 12-power Super Targetspot. Height of scope center above center of bore, 1-11/16 inch.

This test was made by Jerry Knight, head of the gun department of Kerr's Sport Shop, Beverly Hills, California, with a rifle specially made for the test by the Pfeifer Rifle Company.

The same rifle, with a 14-inch twist, was previously tested in standard .300 Magnum caliber by Homer Brown, designer of the Cobra cartridge. These results will be reported later in a special article on rifle twists. After Homer Brown completed the shooting the rifle was turned over to Joe Pfeifer who merely rechambered it for his .300 Improved Magnum. The shoulder angle was sharpened but the body of the case remained the same.

Jerry Knight, who was winner of the aggregate at the bench-rest shooters' match at the Burbank Rifle Club for a recent season, had this to say about the load: "This is the standard hunting load for this cartridge. Weather conditions on the day of the test were cold, clear, with occasional brisk wind. Immediately after firing at 500 yards a group was fired again at 100 yards . . . and the point of impact was still the same."

To which the composer of this treatise must add: The bull Jerry was to fire on at 400 yards blew down just before he fired his first shot. But the paper remained. "Don't bother to change it", Jerry said. "This is just a drop test, anyhow." So Jerry fired six shots, holding at the top of the paper. The group was still good; but it's too bad that happened, because the 500-yard group he subsequently fired measured four inches, and groups like that sometimes happen once in a lifetime. And in that 500-yard group of five shots, four of them measured just 2.75 inches, center to center!

.300 Weatherby Magnum

Cartridge: .300 H. & H. Magnum blown out to form a 90-grain capacity case with Weatherby's special shoulder.

Rifle: FN Mauser, Mashburn trigger, heavy barrel with 14-inch twist, chrome-plated bore. Scope, 8-power Zeiss. Load: 82 grains 4350.

Roy Weatherby made the final tests with this rifle himself, first on a range near his plant at South Gate and finally on the range in Topanga Canyon, California, where practically all the others were made. His extremely flat trajectory at 500 yards was, therefore, proved on two ranges, the latter of which had been verified by a licensed surveyor as to distance.

.300 MVF

Cartridge: The .300 H. & H. blown out, with Venturi shoulder; freebored 4 diameters. Case capacity, 96 grains 4350; load used in test, 73 grains 4064.

Rifle: Model 70 Winchester standard, with National Match type stock, 8-power hunting scope.

This is the largest case used in these .30-caliber tests and is one of the earlier experiments with sharp shoulders by Ralph Waldo Miller. Frank Roden, owner of the rifle, hoped to be able to repeat the test with a load of 4350 powder, but did not have time to do so.

.300 ICL "Grizzly"

Cartridge: .300 H. & H. case blown out, neck shortened, shoulder angle 45 degrees. Case capacity, about 92 grains 4350. Load, 82 grains 4350.

Rifle: Same gun and barrel as that used in .30-'06 ICL test, rechambered and altered for the Magnum case. Twist: one in fourteen inches. Arnold Juenke, of the Santa Monica Gun and Rod Shop, fired this test and left immediately for Oregon on a fishing trip. His parting verbal shot: "Say what you want about this, Hutton, I'll put first a 10-inch and then a 12-inch twist barrel on this gun and test it the same way when I get home."

Other tests tabulated here, with interesting .30 caliber bullets, were by William Bowen, who fired the course with experimental handcast Kirksite "A" bullets from Carl Cramer's number 41 B mould, in a Model 70 Winchester rifle; Ernest Crowley, who tested with the famous 'Wimbledon' load; and James A. Bell, the smallbore shooter, who taught us a few things about GI ammunition from his National Match Winchester rifle.

The composer of this treatise, tabulator, referee and stage manager, begs to announce that his present address is a nearby sanitarium, care of the Dead Letter Office, Washington, D. C. ♦ ♦ ♦

Ivory ON FIREARMS

Since the days of the ancient Egyptians, ivory has been a prized material for the ornamentation of firearms—an art which reached its highest point in the seventeenth century

By Stephen V. Grancsay

THE SIMPLE IVORY inlay one occasionally sees on a modern firearm is the last vestige of a craft that can be traced back for thousands of years. As an example, the Egyptian king Thothmes III, whose birth antedated that of Christ by almost exactly fifteen centuries, is known to have engaged in elephant hunting as a means of obtaining ivory. Leaving aside its early history, it is planned here to show how ivory was used to ornament European firearms in the sixteenth and seventeenth centuries. Interesting also is the fact that the rarity and value of ivory frequently obliged gunstock makers to use such commoner and less costly materials as bone and horn.

These three materials—ivory, bone, and horn—have for centuries been used in the decoration of weapons of the chase. The great majority of the firearms that have come down to us are those which are valuable for their decoration. These owe their continued existence to their status as objects of art, while plain firearms of the same periods have disappeared. It is a curious fact, for instance, that plain military wheellocks are quite rare, while richly-decorated, inlaid wheellock sporting guns abound in any fine arms collection.

The stock of the crossbow was the model from which the butt of the early sporting gun was designed, and both the crossbow and the gun were often ornamented with sculptured and engraved plaques of ivory, bone or staghorn. The early gunstocks were heavy in form in order to balance the heavy barrel, and this in turn provided plenty of surface for decoration.

The wheellock gun of Philip, Duke of Croy-Renty (1526-1595), illustrated on the opposite page, is a showpiece of its kind. Its stock is entirely overlaid with plates of ivory, framed with narrow strips of ebony, and carved in relief with figures representing the gods of Olympus and the story of Perseus. On top of the butt is an inscription in Latin which in translation reads: *It is better that we die in war than witness the disaster of our race.* This gun is remarkable for its fine condition and for the extraordinary quality of the carving. Eyes must have been keener and hands steadier than they now are to enable the artists to carve in such a difficult material so minutely and so well.

Seventeenth century German artists were especially active in ivory and wood carving. Every prince had a hunting castle well supplied with guns, as well as with great ornamental salvers and ewers, made of sections of ivory, which adorned the castle sideboards. As always, guns used by the soldiery were of simple form, but those of the nobles were of magnificent and costly material, the splendor denoting the consequence of the person who used it. One of the principal German gunstock makers was Johann Michael Maucher (active 1670-1693) of Gmünd in Swabia. Maucher was influenced by Rubens and other Flemish painters and he translated in relief very accentuated bacchanalian or mythological subjects, the color and softness of ivory being particularly effective for this purpose. In recent years no less than six guns in this country have been identified as the work of members of the Maucher family. Their stocks are carved with a fantasy of figures and ornament, the wood being effectively relieved with plaques of sculptured ivory and engraved mother-of-pearl. A plaque from one of the Maucher guns in this country is illustrated at the top of this page.

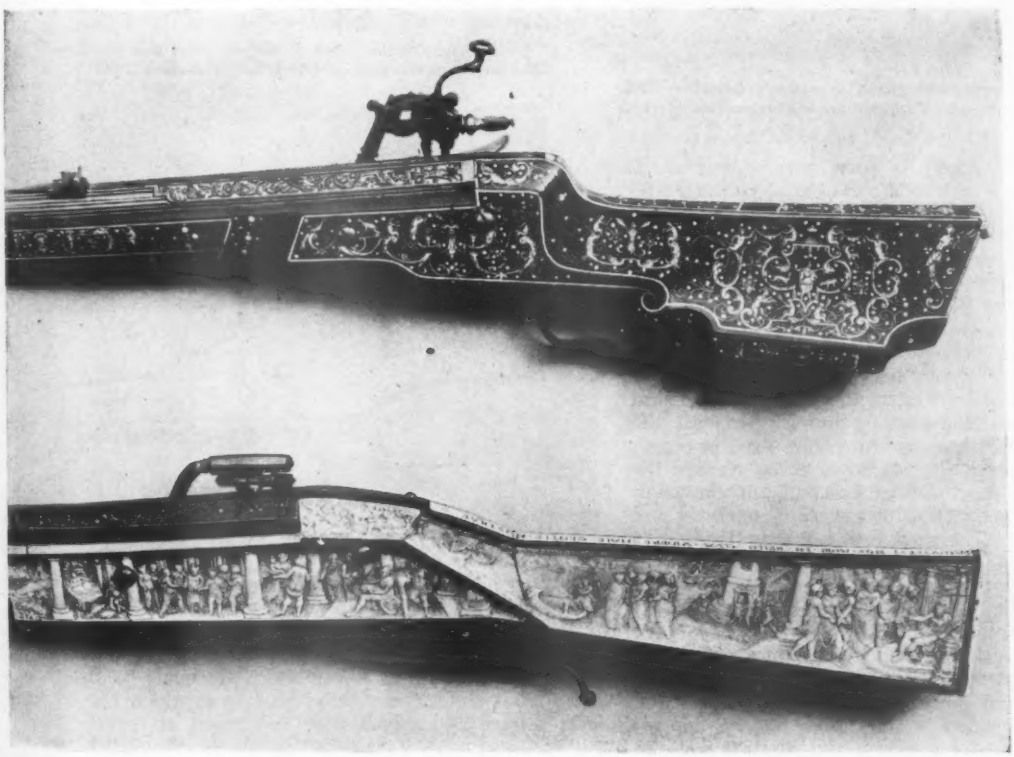
Head carved on butt of ivory-stocked pistol. Helmet is of silver

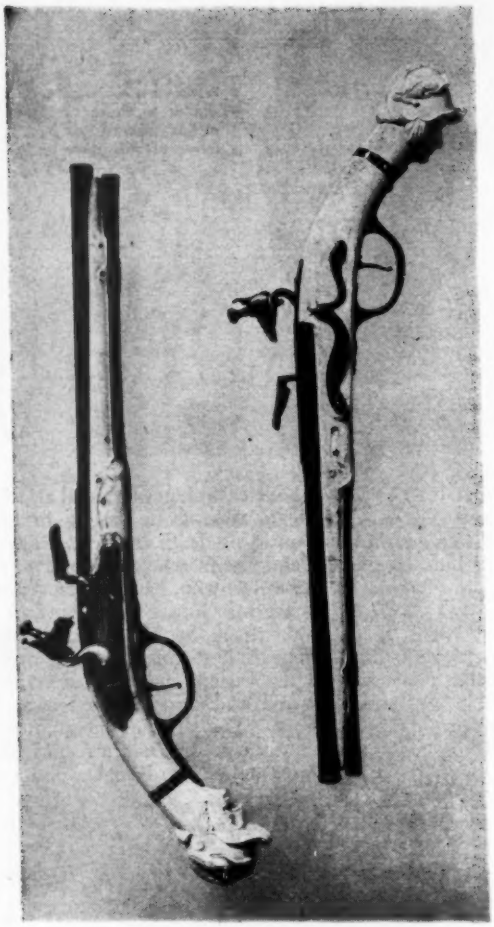
Front view of head similar to those of pistols shown on cover of this issue

The resemblance which staghorn bears to ivory frequently causes the one to be taken for the other. Ivory can be recognized by the crossing grain, which forms lozenges. Bone is visibly porous. Staghorn often shows indentations where burrs have been removed. Staghorn is domestic, hence is obtained more easily than ivory. It is preferable to ivory and bone, because it is easier to bend and draw, therefore tougher and more resistant to atmospheric influences. It does not change shape with heat or cold variations, it seldom breaks or is cracked and hence is more appropriate for wood inlay than ivory or bone.

An outstanding example of a gun ornamented with plaques of staghorn is the wheellock rifle illustrated on page 46, made about 1625 by Daniel Sadeler, a chaser in metal attached to the Bavarian court. Sadeler came from Prague to Munich in 1610, working there until his death in 1632. The barrel of this hunting piece is chiseled in relief, appropriately showing figures of Actaeon (a hunter, who, having seen Artemis bathing, was changed by her into a stag), Diana, and Bacchus. The stock, which was made by the Munich stockmaker Hieronymus Borstorffer, is a distinguished example of the effective blending of the various materials used to enrich a stock. It is of beechwood, and most of the edges are bordered by narrow strips of horn. The strips at the sides of the barrel, the edges of the ramrod socket, and a rectangular border framing the trigger area are of hard snakewood strips. At

Above: Wheellock rifle with stock by Caspar Spät of Munich, 1668. Gun below was made for Philip of Croy about 1560. Stock is ivory covered





Ivory-stocked pistols in author's collection. All other arms illustrated are in Metropolitan Museum

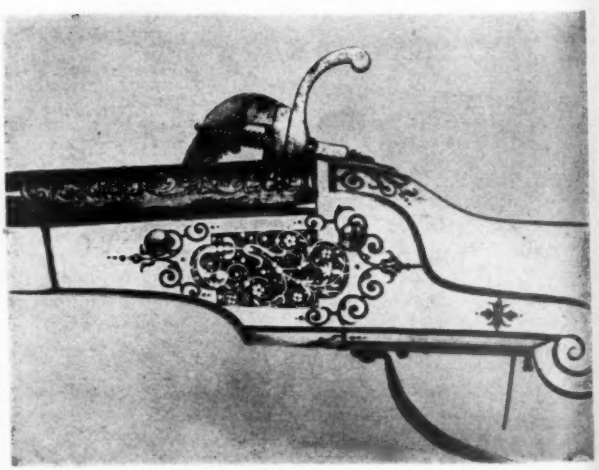
irregular intervals the staghorn is inlaid with walnut panels which in turn are inlaid with foliate designs of polished cow-horn. The staghorn itself is also inlaid with scrolls in hard black wax. Near the butt end of the stock are border strips of ebony and two elongated panels of acajou wood. These numerous color contrasts are strikingly effective.

A large proportion of the existing wheellock firearms are highly decorated with inlays of ivory, horn, and antler. A masterpiece of this type is a wheellock hunting rifle which was made in 1668 by Casper Spät, chaser in steel to the Elector's court at Munich. Its stock is of beech veneered in ebony, and it shows in a pleasing and effective way the contrast of staghorn and bleached white horn inlaid in ebony. Near the lockplate, where the patch-box cover overlaps the stock, appear the pine cone mark of Augsburg and the words EBEN and GUTH (verification of the wood as ebony and quality mark "good"). The stock does not bear the maker's mark, but it is very similar to the solid rosewood stock of another gun by Caspar Spät in the Metropolitan Museum, which bears the initials of the Augsburg stockmaker Elias Becker. The present stock is ornamented with inlays in flexible horn (bleached white) of delicate arabesques interspersed with numerous round and asterisk-like inlays of white horn. The butt plate is inlaid with horn with the blazon of a griffin holding a sword in its claws. This same blazon appears various times in the master books of the Munich guild of goldsmiths as the arms of the members of the Spät family. Apparently the rifle was made for the artist himself or for some member of his family.

Guns of the type which have been described here often had a pair of pistols to match. For example, in the Wallace collection in London (No. 880) is an early seventeenth century wheellock pistol with stock overlaid with plaques of white stag's horn. It was made by Hieronymus Borstorffer who, as we have already seen, collaborated with the Munich artist in ironwork, Daniel Sadeler.

From applied staghorn plaques, it was but a short step to the use of solid ivory for pistol stocks. Ivory-stocked pistols like those on the cover were made in the Netherlands where there was a great vogue of ivory carving during the seventeenth century, due in part to the plentiful supply of ivory brought in by Dutch traders with the East. The carving of these stocks is similar in style and workmanship, and they may all have come from the same workshop which was apparently in Maastricht, the town name which is often inscribed on the locks. Most of the butts, which are formed of a separate piece, are carved in the shape of a head wearing a helmet. The wheellock and flintlock mechanisms were used contemporaneously, at least for a while, during the last half of the seventeenth century. These ivory-stocked pistols were primarily princely gifts, existing examples having been sent as gifts to Prussia, Sweden, Denmark, and Russia. When I visited the Museum in the walled Kremlin in 1926 on an official study trip for the Metropolitan Museum of Art, the director of the museum, Dmitry Iwanov, brought to my attention four pairs of ivory-stocked pistols, one pair being wheellocks, the other three, flintlocks. One pair of flintlocks has ebony stocks with ivory butts carved as heads, one representing the features of Peter the Great, the other of his consort Catherine. The czar visited Holland in 1697 and brought back Dutch artists and gunsmiths to the Kremlin. The Kremlin pistols were apparently made in Moscow by the Dutch artists or under

The horn-sheathed stock of this wheellock gun was made by Hieronymus Borstorffer of Munich, 1625



their influence, for the gunsmith's art was scarcely practised in Russia at that time.

It is a far cry from these magnificent pieces to the modern molded-plastic firearms stocks which are made by the thousands from mule feed (cotton seed from which the oil has been pressed) combined with derivatives of carbolic acid!

Table 2: Pressure and Velocity for High Pressure .357 S&W Magnum Loads

Load	Weight (grains)	Bullet Type	Bullet Diameter (inch)	Seating Depth (inch)	Powder Charge (grains)	Powder Type	Lot No.	Primer	Case Make	Velocity	Velocity Extreme Variation	Pressure	Remarks
1	146	H&G No. 50 Wadcutter	.358	.475	5.0	No. 6	9C	We. 1½	West.	1191	31	41,470	Bad leading
2	144	H&G No. 61 Wadcutter	.357	.450	5.5	No. 5	42C	We. 1½	West.	1186	31	34,470	Bad leading
3	144	H&G No. 61 Wadcutter	.357	.450	5.5	5066	3	We. 1½	West.	1214	57	35,600	Bad leading
4	162	Bond-Ness 358765	.358	.400	6.0	5066	3	We. 1½	West.	1217	30	39,570	Bad leading
5	161	Thompson 358156 GC	.357	.385	8.0	Unique	....	WRA 111	WRA	1398	10	31,840	Very accurate
6	153	Thompson GC HP	.357	.385	8.5	Unique	....	WRA 111	WRA	1506	25	39,920	Very destructive
7	153	Thompson GC HP	.357	.385	12.5	S'shooter	....	WRA 111	WRA	1404	33	27,500	Incomplete burning
8	153	Thompson GC HP	.357	.385	14.5	S'shooter	....	WRA 111	WRA	1618	29	36,800	Very destructive
9	161	Thompson 358156 GC	.357	.385	14.0	S'shooter	....	WRA 111	WRA	1570	42	37,360	Good load
10	153	Thompson GC HP	.357	.385	15.0	4227	....	WRA 111	WRA	1401	40	26,160	Fair load
11	153	Thompson GC HP	.357	.385	16.0	2400	....	WRA 111	WRA	1617	50	34,000	Very accurate
12	161	Thompson 358156 GC	.357	.385	15.5	2400	....	WRA 111	WRA	1538	68	31,960	Good load
13	151	Ideal-Keith 358431	.358	.350	15.0	2400	....	We. 1½	West.	1544	76	28,160	Powerful load
14	155	Ideal-Keith 358439	.358	.375	15.0	2400	....	We. 1½	West.	1556	14	32,700	Powerful load
15	85	Cramer 9-358 Zinc Alloy	.358	.300	18.0	2400	....	We. 1½	West.	1937	26	28,110	Small game
16	158	Commercial load	....	....	....	.....	....	.....	.....	1664	67	43,160	.....

.357 MAGNUM LOADS

(Continued from page 15)

is, with the heavier loads permissible in heavy-framed revolvers.

For years the .357 Magnum cartridge has been loaded with the handloader in the dark as to maximum safe loads. The only data previously available, to our knowledge, was in Phil Sharpe's *Complete Guide To Handloading*, which lists some relatively heavy loads with fairly high pressure which use the 146-grain Sharpe bullet designed for the Magnum cartridge. Frequently, when someone has recommended a charge of say 15 grains of 2400 with a regular 158-grain bullet, the load was considered to be excessive and dangerous. We have used that same load many times in the revolver and rifle without any indications of danger, and it is the same load recommended by Elmer Keith in *Sixgun Cartridges & Loads* (published in 1936). Keith even suggested that the load be cut to 14½ grains. We will note, however, that loads 11 through 15 in Table 2 which use 2400 do not show excessive pressure or develop nearly as much pressure as the factory loads. For a direct comparison we used for these tests the same Ideal Keith bullets recommended by Keith in his book—the Ideal Keith hollow-base 358431 used in load 13, and the hollow-point Ideal Keith 358439 used in load 14. In fact, considering pressure developed by commercial ammunition and the normal working pressure tolerance of this cartridge, these loads could be increased slightly, but experimentally, and in that way obtain velocity more nearly approaching that of the factory load. We have known of some shooters who use as much as 16 grains of 2400 powder with 150- to 158-grain semiwadcutter bullets, but that charge would undoubtedly give very high pressure although we have successfully used 15.5 grains of 2400 with regular Magnum bullets in both the revolver and rifle.

In addition to the Thompson and Ideal Keith semiwadcutter bullets, the Bond-Ness 358765 does very well at high velocity, although in some revolvers it is not as accurate as the Keith and Thompson, possibly because of the longer conical nose section. Another very good bullet, where extreme destruction is not required, is the Bond K358677. A round-nose bullet designed by H. Guy Loverin, it has three good lubricating grooves and, even at high velocity, results in a minimum of leading, as we have found in previous tests. Where the full benefit of the power of the Magnum cartridge is required, there is hardly anything which will equal the hollow-point semiwadcutters. Besides being destructive and powerful, these hollow-point semiwadcutters seem to give fully as good, and many times better, accuracy than any other type of bullet at Magnum velocities. At long ranges, semiwadcutter bullets with solid flat point such as the Keith and Thompson or Bond-Ness will carry better and usually have a higher remaining velocity than the hollow point.

In addition to the Ideal-Keith, Bond-Ness, and Thompson bullets, the Cramer Bullet Mould Company, 11625 Van Owen St., North Hollywood, California, and Hensley & Gibbs, 2692 E Street, San Diego, California, make molds for semiwadcutter bullets which will give equally as good results in the Magnum as will others. The Cramer 24-B weighing 150 grains and the 24-D weighing 158 grains are similar in design to other semipointed bullets. The Hensley No. 48 is also a good bullet for the Magnum. The No. 51 Hensley & Gibbs is a bullet designed by Phil Sharpe especially for use in the Magnum revolver.

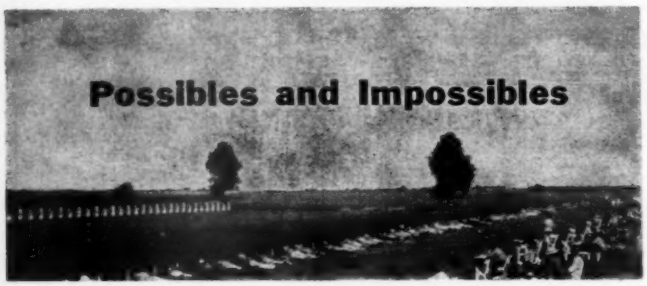
When a light-alloy bullet such as the 85-grain Cramer 9-358, load 10 in Table 1 and load 15 in Table 2, is used, very high velocity at reasonable pressure can be obtained in the handgun. In fact, if the case would hold more powder, even load 15 in Table 2 could be increased to give better than 2000 feet-per-second velocity. Some years ago we used the Bond-Ness mold and cast zinc bullets which weighed 105 grains. With about 3 grains of Bullseye as a booster charge and 14 grains of Hercules 2400, the load would penetrate more steel than any other load in the .357 Magnum. The loads were developed experimentally and have no particular purpose other than extreme penetration. The 85-grain round-nosed bullet used in the tests was a zinc alloy, and the bullets were made by Western Alloy Company, 7315 Atoll Avenue, North Hollywood, California. ◆ ◆ ◆

NEXT MONTH: *Headlining the April issue of the* RIFLEMAN *will be a long-awaited round-up of range building data: how to finance, how to design, how to build . . . in a feature presentation of outstanding case histories. Also, James Serven on the famed Hawken brothers and their frontier rifles, umpteen-times pistol champ Harry Reeves on Olympic shooting techniques, and one more of Dr. White's essays on simplified ballistics.*

A PAPER FOR PEOPLE WHO SHOOT

Rifle Remington

VOL. 14, NO. 3 BRIDGEPORT, CONN. MARCH, 1



That panicky, semi-paralyzed feeling described as "Buck ague" saves the life of many a buck deer each season. But there is another and even more important reason for the poor marksmanship of a considerable percentage of the gunners who take to the woods in search of venison. This is their failure to sight in their rifles properly.

Rifle sights are not easily jarred out of alignment, but it can happen in transportation or otherwise without being too obvious. And when it does happen a whole hunting trip can be spoiled. So, whether your rifle is new or old, be sure to sight it in to suit your eyes or manner of holding before you leave on that big game trip next season. And then be very, very careful in transporting it to the hunting grounds.

The sights of all rifles are carefully adjusted before they leave the factory. If your eyes are exactly normal and you hold it in the proper manner, your rifle should shoot true. However, there is a considerable variation in the eyes of hunters, and they do not all "hold" in just the same manner. Consequently, one man may get bulls-eyes consistently while another, using the same rifle, may find his bullets going wide of their mark. The sights may then be adjusted to make the necessary shooting corrections.

In testing a rifle for accuracy, the shooting should be done from the prone position using a sandbag rest. This rest can be made by simply putting enough sand in an ordinary feed bag so that it will be solid against your wrist and the back of your hand which holds the fore-end when you are in the prone position. Never rest the rifle barrel across a sandbag, log or any solid object.

Aim carefully, take a breath, release a bit of it, hold it, and squeeze the trigger. The correct way to **squeeze** the trigger is to increase the pressure on the trigger so smoothly and steadily that you do not know exactly when the rifle is going to fire. Shoot three to five shots for a group. If the shots are not in the bulls-eye, then move your rear sight in the direction the group would be moved to place it in the center of the target.

If the rear sight is fixed, adjustment for sidewise errors may be made by moving the front sight. If the rifle is shooting to the right, move the front sight to the right or the rear sight to the left. Remember this rule: Always move the rear sight in the direction in which you desire the rifle to shoot. Move the front sight in the opposite direction. The front or rear sight can be moved in its notch by placing a short rod of brass or copper against it and tapping the rod with a hammer, while the barrel itself is supported against a hard block of wood. Set your rifle sights to hit where you aim at the average distance of most shots at deer or other game in your hunting territory. Carefully check the **exact** position of your sights as soon as you have "sighted in" so that they may be returned to proper adjustment if accidentally jarred out of alignment. Test your rifle carefully, making the necessary sight adjustments by following this rule, and your chances of bagging a buck will be greatly enhanced.

A "Sighting - in - Day" would be a worthy project for every sportsmen's club whose members hunt big game. Why not "talk it up" in your club and make it a regular pre-season event?

GUN CLUBS PL
AMBITIOUS IO

"HAM SHOOT" IS INTEREST BUILDER FOR N. J. CLUB

Bridgeport, Conn., March, 1951 — The annual Easter "Ham Shoot" of a New Jersey industrial rifle club draws over a thousand employees to the club's range.

In last year's big shoot, teams of ten entered, each member contributing a dollar. This paid for the ham and ammunition. Every team had a winner.

Competitors were allowed three shots at a Luck Target. The targets measure 5½ inches square, shot at 50 feet from any position. Even the wobbliest shooter could usually plunk in three holes at that distance.

The shooter with the highest score for three shots got the ham. If the shot went in a square the number in the square was added. If it [illegible] a line the total of the squares was allowed. A perfect shot, into a corner, [illegible] four numbers.

LUCK TARGET

1	3	5	9	1	3	5	9	1
5	9	1	3	5	9	1	3	5
1	3	5	9	1	3	5	9	1
5	9	1	3	5	9	1	3	5
1	3	5	9	1	3	5	9	1
5	9	1	3	5	9	1	3	5
1	3	5	9	1	3	5	9	1
5	9	1	3	5	9	1	3	5
1	3	5	9	1	3	5	9	1
5	9	1	3	5	9	1	3	5

Since the corner is s[illegible] than an X-ring it was [illegible] much a matter of c[illegible] which accounts for the "[illegible] Shoots" amazing popula[illegible]

You might try it, as a[illegible] terest builder for your c[illegible]

AROUND OUR CLUB . . . . . Free Consol[illegible]

...emington News

T, CONMARCH, 1951

First Class Reading Matter for Rifle and Pistol Shooters

WEATHER:
WINDS STRONG ENOUGH FOR A GOOD ALIBI

...PN FOR OUTDOOR SEASON; ...S HOOTING PROGRAMS SCHEDULED

A gun club can grow very big in a medium size city. Witness the Pistol Range of the Caddo Rifle and Pistol Club of Shreveport, La.

...S HISTORY NOW:

...Eliphalet Remington Starts ...merica's First Gun Factory

...was the year 1816 when ...g Eliphalet Remington ...his blacksmith father built ...first gun factory, on the ...s of swift-flowing Steele's ...k, near Ilion, N. Y. The ...furnished power. From ...red sandstone ledges they ...grindstones to smooth the ...s of the lap-welded bar- ... The region was searched ...scrap metal to make into ... Barrels were rifled on a ...hine young Remington in- ...ed.

NEW PLANT

...mington's neighbors ad- ...d the fine quality of his ... and orders continued to ...ase. By 1828 Eliphalet ...ngton knew he needed a ...r plant. A farm, on the ... finished Erie Canal near ... N. Y., was purchased. ... the new factory was built,

One of the finest layouts in the country is this 112 pointer. It's owned by the Los Angeles Rifle and Revolver Club.

and here, 135 years later, Remington rifles are still made.

GOING WEST

America was growing, spreading Westward. With the pioneers, jogging in the backs of wagons, cradled in the arms of frontier scouts, went Remington rifles. They were standard equipment for stagecoach and pony express. Down the Allegheny, through the broad valleys of the Ohio and across the wide Mississippi they traveled. Everywhere, pioneer marksmen admired their accuracy. Back to Ilion came more orders for Remington rifles.

FAST PROGRESS

New buildings were added, new methods adopted. The first barrels drilled in America from solid steel were made by Remington. Always searching for a better way, Remington was quick to use the many improvements made in machine tools. These included the slide-rest lathe, planer, shaper, drill press, steam tamper, taps and dies and the vernier caliper. Every improvement meant better guns for less money. In the busy years from 1816 to his death in 1861, Eliphalet Remington built his business around that idea.

EARLY BIRDS BUSY SPRUCING UP CLUB HOUSES AND GROUNDS

Bridgeport, Conn., March, 1951. Elated over their successful winter season, gun clubs are now getting set for "fresh air" shooting. And the clubs feel this summer is destined to be a "hot" one—at least from the standpoint of competition. Club membership and interest in target shooting are high. Everyone is raring to go.

Early birds are already busy cleaning up ranges and club houses. Ambitious improvement plans are afoot. One of the most popular of these is the construction of hard surface, covered firing points. Among many advantages, they provide virtually all-weather shooting. Generally built at a slight angle, hard surface firing points drain easily. And they eliminate that old complaint about uneven ground.

Junior training programs are getting more attention this season. Thousands of sixteen and seventeen year olds will get the benefit of rifle training. Old time marksmen are unselfishly volunteering time and equipment to train youngsters. Many clubs have set aside scheduled days or evenings for exclusive use of their ranges by the young shooters.

Publicity still remains the crying need of most clubs. Those who've tried it, discover local sports editors and radio sports programs are anxious to get stories about competitive or other interesting or unusual shooting events. All that's required is to give them the complete facts. There's no better way to find new members and keep old ones interested.

THE SPOTTING SCOPE -- March 1951

Capsule Report of February Executive Committee Meeting: September 29 to October 6 confirmed as dates of National Smallbore and Pistol Championships (see page 51) and October 6 to 12 for 3rd NRA convention. All events to take place in San Francisco . . . The committee okayed Jacksonville, Florida, as '52 convention site . . . appointed new three-man committee made up of Major General Milton A. Reckord, Carl Kastner, and George Whittington to work for federal appropriations to the National Board for the Promotion of Civilian Marksmanship . . . recognized in a formal resolution the expanding interests of NRA members in bench-rest shooting and authorized the high power committee to study the problems of suitable programs and matches, under proper rules and conditions within the framework of the Association . . . authorized tests of an experimental eleven-bull 50-foot gallery target which combines a sighting bullseye with the present ten-bull target . . . It was the best attended meeting in years. All members of the Executive Committee were present and all but five of the Executive Council. C. B. Lister, Executive Director of the NRA, did not attend the formal meetings but was available in the hotel for consultation. He is rapidly recovering from his recent illness.

Doctor Emmet Swanson stayed over after the meetings to work on the papers necessary to get the American shooting squad off for the Pan-American Games in Buenos Aires. Team adjutant Swanson got his shooting boys—Arthur Cook, Arthur Jackson, Sergeant Huelet Benner and Harry Reeves—out of Idlewild Airport, New York, on February 22nd without a hitch. On the way back from South America, Reeves and Benner will stop in Tampa, from March 13-17, to compete in the National Midwinter Pistol Championships . . . Captain Tulio Verna, well-known Illinois pistol shooter, is now in charge of all pistol instruction for the Illinois State Police . . . Lt. William Andreasen, of the San Mateo, California, police is conducting a junior rifle instruction program for 275 of the community's youngsters . . . Charles Stone and Bert Wahl of Bakersfield, California, have 15 clubs in the town's junior rifle instruction program and employ a paid instructor . . . Union Oil Company has paid the Santa Maria Rifle Club, in California, $800 for the privilege of drilling on the club's eighty acres. Club members can still shoot on the property. If oil is hit the club will get 16½% of all the profits . . . The Trade Book Clinic of the American Institute of Graphic Arts has chosen GUNSMITHING SIMPLIFIED by Harold E. MacFarland (Sportsman's Press) as one of the best books designed in 1950. This is the first time a National Rifle Association library book has received the honor.

Air Commodore G. Silyn Roberts, Vice-Chairman of the RAF Smallarms Association and a member of the National Rifle Association of England was a recent visitor at NRA headquarters . . . Major General Milton A. Reckord, retired Executive Vice-President of the NRA, is now president of the world famous Pimlico race track, scene of one of America's great horse races, "The Preakness" . . . Bill Shadel, former managing editor of the RIFLEMAN, was recently elected president of the Radio Correspondents Association . . . Shooters lost two good friends when Joseph Goss and Edward H. Cane died recently. Goss was the maker of the famous Goss Sights and Cane, for many years, was editor of "Field and Stream" and "Sports Afield" . . . Fritz Howell, Associated Press sports chief for the midwest, would like to hear from his many good friends of Camp Perry days. He can be reached in Columbus, Ohio . . . Monmouth College, in Illinois, is the only institution of higher learning in the country, as far as we know, which gives credit for a Basic Rifle Instruction course . . . League of Ohio Sportsmen at their convention in Columbus, February 7 to 10, expressed great interest in the work of the NRA . . . San Francisco is the only place any NRA member can afford to be between October 6 and 12. Make your plans now to attend the Convention.

Paul Cardinal

San Francisco Site for 1951 National Championships, Firing Starts Sept. 29

The 1951 National Smallbore Rifle and Pistol Championships will be fired in San Francisco, California, from September 29 to October 6, 1951. Negotiations for the High Power Rifle Championships are still in process and no location, dates or promises that they will be held can be given at this time.

The smallbore championships will be held at the municipally-owned Sharp Park Range from October 3-6 and will be staged by the California State Association and the San Francisco Rifle and Pistol Association under the auspices of the NRA. As planned for the cancelled 1950 smallbore title tournaments, two national crowns will actually be at stake in the championship race. On October 3 and 4 marksmen and sharpshooters will compete for their national class crown. On October 5 and 6 Robert McMains of Dallas, Texas, the present national champion and holder of the Critchfield Trophy will be asked to defend his national title.

The marksman-sharpshooter pistol championships will get started on the San Francisco Police Range September 29 and run to October 1. If authorized the service pistol will be fired on October 2. National pistol champion, Sergeant 1st class Huelet Benner, of Ft. Knox, Kentucky, will defend his national title and Harrison Trophy from October 3 to 5. NRA team championships will be shot Oct. 6.

The National Rifle Association will supply all prizes, trophies and medals for the nationals. Competitors will fire in one of the summer regionals to qualify for the national championships fields. With Emil Dutil's assurance that the San Francisco police range can handle a total of 720 shooters for the two pistol tournaments, officials feel that all competitors in the regionals who signify their intention to compete in the nationals can be accommodated. If it should become necessary to eliminate anyone from the national field, it will be from the low scores fired in all classes at the regionals. In the case of the smallbore nationals, 500 shooters can be accommodated in San Francisco. Here again it appears that this figure will accommodate all who want to fire in the nationals. If it does become necessary to eliminate anyone, it will be from the low scorers at the rifle regionals.

In 1950, the high power championships were scheduled for Camp Roberts, California. The Sixth Army was to supply the location and personnel. This year the Army, because of present world conditions, cannot plan to do either. The commanding general in reluctantly having to say "no" to the NRA request, said, "there's nothing we would like to do more but it is just beyond our capabilities with the present buildup of army forces."

The hope of holding High-Power championships, however, is not entirely dead. General Erskine, Marine Corp Commander for the Department of the Pacific has expressed an interest in staging the matches for the NRA if they can find a location and personnel. Before a final yes or no is given, the Marine Corps will need more time. As soon as anything definite is known, the facts about high power championships will be published in the RIFLEMAN and *Tournament News*.

SUMMER TOURNAMENT SCHEDULE

To have tournaments listed in the "Summer Tournament Schedules" booklet applications must reach the NRA before March 15. The schedule will be mailed about April 15th to 40,000 competitors, 7000 clubs, and NRA Official Referees. Tournament registration applications received after March 15th will not be published. To give competitors a full opportunity to select the tournaments they wish to attend, all clubs should get their date reservations in before the dead-line date.

DCM NOTES

The following types of ammunition and ammunition components are presently available for sale by Ordnance Arsenals to NRA members for their personal use:

Ammunition:
- Caliber .30 M2
- Caliber .45 MI911
- Caliber .22 Long Rifle
- Caliber .38 Special

Components:
- Bullets, Caliber .30 M2, 152 grain
- Bullets, Caliber .45 MI911, 230 grain
- Primers, Caliber .30
- Primers, Caliber .45
- Cartridge cases, Caliber .30 M1, primed IMR powder

Individual NRA members may send requests for items to the Director of Civilian Marksmanship, Department of the Army, Washington 25, D. C. Club Secretaries may submit consolidated requests for members of their club. Do not send money with requests. Orders will be forwarded to Ordnance Arsenals by the DCM. The Arsenals will notify purchaser as to the cost of purchase and where money should be sent.

NRA TRAINING SCHOOLS

The NRA's basic rifle training program is rapidly getting under way. In the short time since the school plan was announced, 87 rifle training schools have come into being, and the clubs conducting the schools are receiving favorable publicity. In addition to offering basic rifle training to pre-inductees, some of the clubs have tied in with the Civilian Defense program and are training special groups at the request of civilian defense officials.

The demand for qualified instructors is being met and the NRA training section has been swamped with applications for both rifle and pistol certificates and examinations.

New registered school certificates have been designed and are being sent to all approved rifle and pistol training schools

The NRA basic smallarms training school material is now complete and special packets of the pistol school plan are being mailed to all club secretaries and others interested in the organization and conduct of pistol training schools.

Since the pistol training program is just getting under way, there are no available statistics but New York State is once more demonstrating its qualities of leadership with eleven rifle schools in full operation. A number of additional schools are being organized.

Complete information regarding the organization and operation of NRA basic rifle and pistol training schools will be furnished upon request. Write to the National Rifle Association, 1600 Rhode Island Avenue, Washington 6, D. C.

INTERCOLLEGIATE CHAMPIONSHIPS

The 1951 firing of the annual inter collegiate championships will take place on April 7. The shoulder-to-shoulder events, with titles for both individual and team performances, are scheduled for fifteen locations across the nation. Programs and entry forms will be mailed to all affiliated colleges about March 10. The listing below includes all locations of 1951 sectional tournaments, together with the address in that location to which requests for programs and information should be sent.

Burlington, Vermont
Lt. Col. Edward W. Crawford
University of Vermont

Cambridge 30, Massachusetts
M/Sgt James K. Brahe
MIT Rifle Team
Massachusetts Institute of Technology

New York 18, New York
Edward Moore
New York Journal American
200 South Street

Buffalo 14, New York
Clark A. Ritchie
101 Highgate Avenue

College Park, Maryland
Col. H. C. Griswold
Military Department,
University of Maryland

Columbus, Ohio
Sgt. Leon Kapeghian
Department of Military Science
Ohio State University

Atlanta, Georgia
Warren E. Lind
Box 3080

Madison, Wisconsin
Sgt. James Bruhy
University of Wisconsin

Baton Rouge 3, Louisiana
Lt. Col. Frederick T. Berg
% Military Department
Louisiana State University

College Station, Texas
Maj. L. E. Garrett
School of Military Science
Agricultural and Mechanical College of Texas

Stillwater, Oklahoma
Capt. James A. Seab
Military Department
Oklahoma A. & M.

Boulder, Colorado
Bob Miller
264 Fleming Hall
University of Colorado

Los Angeles 24, California
Karsten Johannsen
UCLA Varsity Rifle Team

Berkeley 4, California
Rifle Team, Military Department
University of California

Pullman, Washington
Capt. E. J. Fredericks
Military Department
Washington State College

COMING EVENTS

1951 REGIONAL SMALLBORE

May 12-13 at Phoenix, Arizona
Far Southwestern Regional Smallbore Rifle Championship
Phoenix Rod and Gun Club
Glenn Taylor, Box 7116, Indian School Station, Phoenix, Arizona

June 23-24 at Waco, Texas.
Southwestern Regional Smallbore Rifle Championship
Central Texas Rifle and Pistol Club
B. Ramsey Powell, Citizens National Bank, Waco, Texas

June 30-July 1 at Des Moines, Iowa
Midwestern Regional Smallbore Rifle Championship
Des Moines Rifle and Revolver Club
Howard D. Smith, 405 E. 2nd Street, Des Moines 9, Iowa

July 7-8 at Anaconda, Montana
Northwestern Regional Smallbore Rifle Championship
Anaconda Rifle and Pistol Club
Fred J. Mesenko, 700 Oak Street, Anaconda, Montana

July 14-15 at Middlefield, Connecticut
Northeastern Regional Smallbore Rifle Championship
Connecticut State Rifle and Revolver Association, Inc.
J. Russell Lent, Middlefield, Conn.

July 21-22 at San Francisco, California
South Pacific States Regional Smallbore Rifle Championship
San Francisco Rifle Association
Dr. Chas. J. Parshall, 530 Fulton St., San Francisco, California

August 4-5 at Baltimore, Maryland
Middle Atlantic States Regional Smallbore Rifle Championship
Associated Gun Clubs of Baltimore, Inc.
Joseph N. Schlick, 605 Radnor Avenue, Baltimore 12, Maryland

August 4-5 at Knoxville, Tennessee
Southeastern Regional Smallbore Rifle Championship
Volunteer Rifle and Pistol Club
A. W. Nine, 104 Underwood Place, Knoxville, Tennessee

August 4-5 at Bristol, Indiana
North Central Regional Smallbore Rifle Championship
St. Joseph Valley Rifle and Pistol Association
Mrs. Garnette R. Honer, 1115 North Huey Street, South Bend, Indiana

August 4-5 at Lafayette, Colorado
Rocky Mountain Regional Smallbore Rifle Championship
Lafayette Rifle Club, Inc.
E. L. Mathes, 4855 Irving Street, Denver, Colorado

August 11-12 at Seattle, Washington
North Pacific States Regional Smallbore Rifle Championship
Washington State Rifle Association
C. M. Styer, 3447 41st Avenue, S. W., Seattle 6, Washington

1951 REGIONAL PISTOL

May 18-19-20 at Bakersfield, California
South Pacific States Regional Pistol Championship
Kern County Pistol Club
F. C. Stanton, 344 Western Drive, Bakersfield, California

June 15-16-17 at Houston, Texas
Southwestern Regional Pistol Championship
Bayou Rifle Club
Frank L. Ratcliffe, 1319 W. Pierce, Houston 6, Texas

July 6-7-8 at Harrisburg, Pennsylvania
Middle Atlantic States Regional Pistol Championship
Hunters and Anglers Rifle and Pistol Club
F. H. Wells, 3800 Hillcrest Road, Harrisburg, Pennsylvania

July 14-15 at Poughkeepsie, New York
Northeastern Regional Pistol Championship
Dutchess County Pistol Association, Inc.
Mrs. Martha W. Strahan, 30 Arnold Boulevard, Poughkeepsie, New York

July 21-22 at Denver, Colorado
Rocky Mountain Regional Pistol Championship
South Platte Chapter, Isaac Walton League Rifle and Pistol Club
Oscar R. Mains, 2432 W. Argyle Place, Denver, Colorado

August 3-4-5 at Los Alamos, New Mexico
Far Southwestern Regional Pistol Championship
Atomic Energy Protective Force Gun Club
George R. Irwin Atomic Energy Protective Force, Los Alamos, New Mexico

August 10-11-12 at St. Louis, Missouri
Midwestern Regional Pistol Championship
Greater St. Louis Revolver Club
Frank Stubits, 5507 Lisett Avenue, St. Louis 9, Missouri

August 11-12 at Boise, Idaho
Northwestern Regional Pistol Championship
Boise Rifle and Pistol Club, Inc.
Emily Davidson, Route #3, Boise, Idaho

August 17-18-19 at Raymond, Washington
North Pacific States Regional Pistol Championship
Capitol Pistol Club, Inc.
Malcolm B. Edwards, P. O. Box 252, South Bend, Washington

August 17-18-19 at Jacksonville, Florida
Southeastern Regional Pistol Championship
Jacksonville Police Pistol Club
C. A. Brown, Jacksonville Police Department, Jacksonville, Florida

August 18-19 at Brighton, Michigan
North Central Regional Pistol Championship
Livingston Gun Club
Charles H. Drew, 12345 9 Mile Road, South Lyon, Michigan

STATE CHAMPIONSHIP* TOURNAMENTS AND OTHER REGISTERED TOURNAMENTS

MARCH

3-4 NEVADA—Nevada State Smallbore Championship at Boulder City, Nevada. Mr. Walter A. Jonasen, 417 Birch Street, Boulder City, Nevada.

4 OHIO—23rd Annual Ohio State Pistol Gallery Championship Match at Columbus, Ohio. Mr. Harry L. Spalt, Secretary, 2003 Hazelwood Avenue, Dayton 9, Ohio.

3-4 MICHIGAN—Michigan State Smallbore Gallery Championships at Detroit, Michigan. Mr. John C. Benedict, 2546 Edison, Detroit, Michigan.

11 IDAHO—Idaho State Gallery Pistol Championship at Twin Falls, Idaho. Mr. Thomas M. Hill, Hansen, Idaho.

17-18 VIRGINIA—Virginia State Gallery Championship at Norfolk, Virginia. Mabel L. Grissom, P. O. Box 626, Portsmouth, Virginia.

17-18 IDAHO—Idaho State Gallery Rifle Championship at Twin Falls, Idaho. Mr. Thomas M. Hill, Hansen, Idaho.

17-18 INDIANA—Indiana State Indoor Championship Rifle Tournament at Indianapolis, Indiana. Mrs. Waunelia Heise, 316 Warren Building, Michigan City, Indiana.

17-18 NEW MEXICO—New Mexico State Championship Gallery Rifle Tournament at Roswell, New Mexico. Sergeant A. J. McShane, N. M. M. I., Roswell, New Mexico.

18 MINNESOTA—State Gallery Pistol Tournament at Minneapolis, Minnesota. Mr. Robert Kangas, 4317 13th Avenue, South, Minneapolis, Minnesota.

20-21-22-23 FLORIDA—Miami Flamingo Open Pistol Tournament at Coral Gables, Florida. Mr. A. T. Kelley, P. O. Box 43, Coral Gables, Florida.

24-25 WYOMING—Wyoming State and Central Wyoming Gallery Match at Douglas, Wyoming. Mr. James Read, Douglas, Wyoming.

March 31-April 1 WASHINGTON—Washington State Gallery Rifle Championship at Seattle, Washington. Mr. C. M. Styer, 3447 41st Avenue, S. W., Seattle 6, Washington. (Adv.)

March 31-April 1 NEW YORK—4th Annual New State Indoor Pistol Tournament at Endicott, New York. Mr. C. Arthur Plummer, 408 Hazel Avenue, Union, New York.

30 April 1 NEW JERSEY—Garden State Rifle League Shoot at Union City, New Jersey. Mr. Charles Grollimund, 312 9th Avenue, Paterson, New Jersey.

31 April 1 MINNESOTA—State Gallery Rifle Championship at Minneapolis, Minnesota. Phyllis J. Gustafson, 184 Arthur Avenue, S. E., Minneapolis, Minn.

APRIL

1 NEBRASKA—Nebraska State Gallery Tournament at Grand Island, Nebraska. Mr. H. H. Buis, 1312 N. 35th Street, Omaha, Nebraska. (Adv.)

8 OREGON — Oregon Annual Gallery State Championship at Portland, Oregon. Mr. Russell S. Cornelius, 8322 N. E. Glisan Street, Portland 16, Oregon.

13-14-15 KANSAS—State of Kansas Gallery Rifle Tournament at Manhattan, Kansas. Mr. Jess E. Mosteller, 1216 Thurston Street, Manhattan, Kansas.

14-15 MONTANA—Montana State Gallery Pistol Championship at Helena, Montana. Dr. Robert E. Englert, 1405 4th Avenue North, Great Falls, Montana. (Adv.)

20-21 VIRGINIA—2nd Annual Virginia State Smallbore Gallery Championship at Newport News, Virginia. Mr. J. W. Courtney, Jr., 644 Briarfield Rd., Newport News, Virginia.

21-22 OHIO—Ohio State Gallery Team Matches at Columbus, Ohio. Mr. John R. Lang, 3498 Meadow Avenue, Cincinnati, Ohio.

21-22 MICHIGAN—Michigan State Championship Gallery Pistol Matches at Brighton, Michigan. Charles H. Drew, 12345 9 Mile Road, South Lyon, Michigan.

21-22 UTAH—Utah State Gallery Rifle Championship at Logan, Utah. Mr. Ralph K. Walker, 877 North Main, Nephi, Utah.

27-28-29 PENNSYLVANIA—7th Annual State Gallery Pistol Tournament at Wilkinsburg, Pennsylvania. Mr. W. H. Riethmiller, 750 Jefferson Drive, Pittsburgh 29, Pa.

28-29 MONTANA—Montana State Gallery Rifle Championship at Big Timber, Montana. Mr. E. S. Shoemaker, 2010 8th Avenue North, Great Falls, Montana. (Adv.)

CHANGES AND CANCELLATIONS

March 4 MONTANA—Yellowstone Valley Tournament at Big Timber, Montana. Walter H. Osborne, 116 Yellowstone Avenue, Big Timber, Montana. (NOTE: old date scheduled for March 5.)

March 31-April 1—WASHINGTON—Washington State Gallery Rifle Championship at Seattle, Washington. Mr. C. M. Styer, 3447 41st Avenue, S. W., Seattle 6, Washington. (NOTE: old date scheduled for March 24-25.)

April 1 MONTANA—Annual Gallery Pistol Tournament at Great Falls, Montana. Dr. Robert E. Englert, 1405 4th Avenue North, Great Falls, Montana. (NOTE: old date scheduled for March 25.)

April 15 MINNESOTA—Lake Region Gallery Tournament at Fergus Falls, Minn. Ernest A. Haeuser, 304 N. Whitford, Fergus Falls, Minnesota. (NOTE: old date scheduled for March 18.)

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STOLEN GUNS

Springfield Sporter, Remington #3248412. S&W K-22, #K85140. Richard E. Lemmon, Box 781, Coeur d'Alene, Idaho.

.45 Colt auto., #C-181010; .22 Colt auto., #2079-S; .22 Colt auto., #Mt.3883; .38 Colt, #642760; .22 Colt, revolver, #11427; .45 Colt, #191424; 9mm Luger, #7902; $100 Reward. Dr. A. Donroe, 264 Mohawk Pl., Dearborn, Mich.

Colt .32 auto., #163815; Colt .38, #600112. M. Holmes Shoemaker, Box 345, Elmira, N. Y.

Savage, Model 99, 300 cal., #550429. George Culver, Culver Hardware Co., Lampasas, Tex.

.45 Colt, #209901. Grady W. Smith, Cattle Ranch, Holly Springs, Miss.

Bel. Browning 12-gauge shotgun, #253089; Model 70 Winchester .270, #92876. $50 Reward. W. K. Evans, 1859 Niagara St., Denver 7, Colo.

Model B Hi-Standard Auto #7735. Armin Strickert, Scott City, Kans.

American Browning Shotgun 12 Gauge, #B33580. $25 Reward. Joseph Paulauskas, 213 South Douglas Street, West Frankfort, Ill.

Sportorized Springfield, #408-754. Ralph Y. Gustafson, 9719 19th Ave., N. E., Seattle, Wash.

270 Remington 721A, #146976. Ellis E. Royat, Dobbins, Calif.

Dope Bag

answers by THE RIFLEMAN'S PANEL OF EXPERTS

Julian S. Hatcher • Al Barr • Elmer Keith
Phil Sharpe • Harold MacFarland • Hugh C. Stith

MACFARLAND JOINS RIFLEMAN

Effective with this issue, the RIFLEMAN's 'panel of experts' includes still another name —that of Harold E. MacFarland. Selected to answer your gunsmithing questions, MacFarland is the author of the recently published and highly successful book, *Gunsmithing Simplified*. Already well known to RIFLEMAN readers through the articles he has contributed in recent years, MacFarland takes his place alongside Hatcher, Barr, Sharpe and Keith to bring you the finest line-up of gun writers ever assembled by one magazine.

One other 'new' name appears on the mast-head of this month's Dope Bag—Hugh C. Stith. Already well established as a member of the magazine's technical staff, Stith is the youngest among the RIFLEMAN's question-and-answer group. After service as a Naval officer during World War II, Stith joined the Association staff as junior member of the RIFLEMAN's technical panel, and has since shared equally with the others in the task of answering the thousands of reader inquiries received annually.—ED.

GERMAN AMMUNITION PRODUCTION

Our mail brings many letters indicating that shooters are very happy that they can again get RWS German sporting ammunition for their many odd caliber guns brought back as souvenirs. They think their worries on this score are over, but unfortunately I'm afraid they are doomed to disappointment. At the end of the war RWS had quite a stock of ammunition on hand and some of that is now being imported and sold in this country, but the firm went out of business completely on the ammunition line and was superseded by a new plant known as the Nurnberg-Further-Industriwerke, with a new trademark, NFI. They make machines, light machine presses, the German equivalent of a "Mixmaster", and similar products, but no ammunition. The other German ammunition plant, DWM, is also out of business on ammunition. While some German ammunition is now coming in and available, it is all part of that old 1945 stock left over at the end of the war and when that is gone no more can be had.—PHIL SHARPE.

WORN HAND

My .38 Colt Officers' Model target revolver, although used when acquired, seems to be in excellent shape both inside and out. When the hammer is cocked rapidly the cylinder locks and there is only a tiny bit of play in its movement. However, when the hammer is pulled back slowly I can rotate the cylinder appreciably before I hear the click signifying that the cylinder is locked. Since I always try the cylinder before firing the gun, I have never noticed indication of lead shaving.

Can you tell me what is wrong with my revolver?—JOHN L. DRUMMEY, JR., Hyde, Park, Mass.

Answer by Elmer Keith: Your Officers' Model Colt has a worn hand and that is the sole reason that when cocked slowly the cylinder does not quite revolve far enough for the bolt to lock. You could have any competent gunsmith fit a new hand or send the gun to the Colt factory and have them do so.

722 TRIGGER OPERATION

I have a new 722 Remington rifle and I am stumped as to how the trigger and sear operate. On another bolt-action rifle, when the bolt is removed, you can see the sear being depressed as the trigger is pulled. On the 722, with the bolt removed, nothing happens to the sear when the trigger is pulled. Yet with the bolt in place and the piece cocked, the sear must be depressed when the trigger is pulled. How does the mechanism operate? — RALPH S. TABOR, York Harbor, Maine.

Answer by Al Barr: With your Remington rifle empty and cocked and out of the stock, look through the little hole in the right-hand side of the stamped trigger housing and you'll see what happens. You will see a very shallow sear engagement between trigger and sear proper. Then with the bolt out of the gun, put pressure on the trigger and at the same time push forward on the sear which you see inside the bolt race. In other words, forward pressure of the mainspring when the sear is engaged forces the sear proper down and out of the way when pressure is applied to the trigger. Don't try to get inside that mechanism because you may spoil it. Many so-called special triggers are made on the same principle.

IMPORTANT NOTICE

Letters sent to the Rifleman's 'panel of experts' cannot be answered unless they are addressed in care of the American Rifleman, 1600 Rhode Island Avenue, Washington 6, D. C. Do not send your Dope Bag queries to the home addresses of Rifleman staff writers.

ALLOY FOR CASTING BULLETS

I am planning to cast some bullets and would like to know if you could help me determine the components to use. I know that lead may be purchased in a ready-to-cast state. But what should one do when planning to use Linotype metal and the alloy metal is not known? Is there any test to determine the proper consistency, such as cutting the bullet with a knife?—JOSEPH C. LAWRENCE, South Amboy, N. J.

Answer by Phil Sharpe: Personally I haven't used any virgin metals for almost twenty years. I cast from scrap, consisting of any kind of lead I can melt. I harden it a little with anything I can get, and guess at the hardness. And I can't see that it makes any difference. I didn't care to go on record in this but, in the past few years, I have talked with many an active handloader who frankly told me he never knew what alloy he had since he used scrap. So I wasn't alone.

If you have a supply of linotype metal, add a pound of lead to a pound of type metal and you will have some sort of alloy which works well in all revolvers and many rifles. If you don't get satisfactory accuracy, cut the pure lead content in half. Frankly, I don't think that you'll find much difference in performance.

TYPES OF MAUSER ACTIONS

I have been trying to find what I understand to be a 'short action Mauser' action for re-barreling to .250-3000. Is this known as the 98-K?

I am quoted by a Canadian firm on what they call a 'Spanish Short Action Mauser, 7 mm', at $15.00. I wonder if you would advise me as to the safety and quality of the 'Spanish short action' they quote? I thought the short action ones were 6.5 mm. I don't want to buy junk; yet, I don't care if it is branded Spanish if it is entirely all right. Where might I buy the genuine short Mauser in good used condition at a reasonable price?—RALSTON P. HAUN, Coleman, Texas.

Answer by Al Barr: The Mauser action has been manufactured in at least four different lengths. Starting with the longest, there is the Magnum Mauser, then the standard Model 1898 (which includes the K-98), and there is a little shorter length such as the Spanish and Mexican Mauser, but the truly and only truly short Mauser is even shorter than the Spanish or Mexican Mauser. It was made for relatively few cartridges, including the 6.5 x 54 mm. Mauser cartridge and also the 8 x 51 mm. I don't know the exact length of it.

The Spanish 1893 Mauser is not the shortest one and personally I wouldn't have one. It has an extremely long striker travel and no third locking lug. I don't think it is what you want. I'd rather have one of the better Mexican Mausers, especially one such as the M-1903 made in Berlin for the Mexican Government. It is about the shortest you can get, unless you were lucky to get the truly short one made for the two cartridges mentioned above. You can expect to pay a very fancy price if you can find a truly short Mauser.

KENNEDY LEVER ACTION

I have in my possession a lever-action rifle that I would like to have you identify or give me as much information on as possible. The markings are as follows: On the top of the barrel, "Whitneyville Armory C.T. USA Kennedy" and ".44 caliber C.F." On the upper receiver tang, "Patd. January 7-73" and "April 1-121-May 13-August 12-79".—KENNETH JOHNSON, Canton, Ohio.

Answer by H. C. Stith: It appears that you have the Kennedy lever-action repeating sporting rifle which was manufactured in various calibers. To load the particular magazine of the Kennedy it was necessary to open the action while operating the finger lever and retain it in open position while the cartridges were inserted. This method was somewhat different from the Winchester repeating rifle, which the Kennedy closely resembles. The Kennedy rifle was regularly supplied with octagon or round barrels of 24-inch lengths, and the .44-40 caliber had an overall length of 42½ inches. It weighed nine pounds with the octagon barrel and 8¾ pounds with the round barrel. The tubular magazine held fifteen shots.

The Kennedy was also chambered for the .32-30, .38-40, .45-60, .40-60, .50-95 express, and the .45-75 WCF. It was manufactured at Whitneyville Armory, Conn., by the Whitney Arms Company. The company was founded by Eli Whitney, inventor of the cotton gin, and continued in the family until the company ceased operations in 1888.

The Kennedy rifles did not appear on the market for a very lengthy period, probably due to the fact that they were too similar to the Winchester arm, which had very definitely established itself as the leader in the lever-action repeating field.

PISTOL PRIMERS IN SHOTGUNS

Please tell me which large rifle or pistol primers will give satisfactory ignition to Red Dot or MX powder in a shot shell. I use about 23 grains behind one ounce of number 9 shot for a skeet load. Of course I know rifle primers are not intended for shot shell but it is no problem to adopt them to this use.—S. F. NELSON, Eustis, Florida.

Answer by Elmer Keith: The large pistol primers such as the Remington 2½ and corresponding large diameter primers by Winchester or Western should work. I have used many of them in Sharps rifles with black powder. The large modern rifle primers are both too hot and too hard for shotgun use.

PRIMERS

I understand that Winchester has discontinued their number 115 primer. As I'm having a .219 Wasp built, what primer do we use for it now? Everyone seemed to agree the 115 was the primer for the Wasp, the 120 being too 'hot'.

Is there a primer similar to the number 115 in Remington's or Western's line? So far as I know the number 8½ is the only Western, but Remington has numbers 7½, 8½, and 9½, one of which should be similar to the 115.

I have a few hundred Remington 7½ and I notice there is no mark to indicate if they are non-mercuric or noncorrosive. I'd never heard of the 7½ until a friend bought a case of them a couple of years ago.

Would you know why Winchester discontinued the 115? Is there any chance of their resuming its production? — R. M. ANYS, Holland, Michigan.

Answer by Al Barr: Since the Winchester 115 primer is not available you will have to use what you can get, namely the Winchester 120, Remington 9½, or the Western 8½. Chances are the Western 8½ would be as good as any you can use in the .219. I think a lot of shooters are kidding themselves about the 120 primer being too hot for certain cartridges.

There is only one Remington primer available now to my knowledge and that is the 9½. Since you have the Remington 7½, I would surely try them.

Only Winchester could tell you why they discontinued the 115 primer, except that possibly it was so much like the 120 that it wasn't worth the bother to manufacture two different primers.

MODEL 1895 WINCHESTER

I recently saw a Winchester lever-action box magazine .30-'06 rifle stamped as being a Model 1895 Winchester for .30 Government cartridge. I'm interested in knowing why such a powerful cartridge, which is generally considered as suited only for bolt actions, was put into a lever-action rifle.—CHARLES V. PHILLIPS, Ilion, N. Y.

Answer by Phil Sharpe: The Model 1895 Winchester originated by John Browning was, because of its design, the strongest lever action ever made. Thus it was built to handle, among other powerful cartridges, the .30-'06 and is safe for that cartridge with factory loads.

Following World War I many of these guns were blown up. Detailed investigation by the Winchester Company revealed that in every case it was due to an attempt to shoot the 7.92 mm. German military ammunition having a .323-inch diameter bullet in this gun intended for a .30-'06. The 7.92 mm. ammunition can be chambered, but those oversized bullets don't like a .308-inch barrel. Winchester tested them for pressure in the Model 95 rifle and one test revealed a 105,000 pounds pressure before the gauge broke. Thus, Winchester dropped the .30-'06 caliber as a matter of safety, although the Model 95 gun was safe with the ammunition for which it was intended.

.404 ENFIELD

I've decided that when I get out of here I want one real rifle, a cannon I guess you'd call it, something with considerably more authority than my .30-40 Krag. I've about settled on a .404 Jeffrey, but, since that's not a standard cartridge over here, getting one will be quite involved, I'm afraid. What I'd like to know is, can an Enfield action be worked over to handle the .404 cartridge? I know that .300 and .375 H&H Magnums are made on Enfields. Is the .404 any longer?

Should I get such a rifle, there's still the problem of loads. Can Berdan primers for the .404 be imported and do you consider reloading foreign-primed cases practical?

One final question. What's the bore diameter of the .404? Could .405 WCF bullets be used in reduced loads?—HUBERT W. LOCQUMENT, West Point, New York.

Answer by Elmer Keith: Yes, the Enfield can be rebarreled to .404 magnum. The case is slightly larger in diameter than the magnum case of the .375 except on the belt. It's a whale of a good load and ammo can be easily obtained from Abercrombie and Fitch or Stoeger and other importers. The .404 is about same length as the .375 but has a fatter case with deep bullet seating; it duplicates the .450-400 double rifle rimmed load.

Yes, you can also import the Berdan primers or have the cases altered and a new steel primer seat to fit American primers pressed in after drilling out the old Berdan anvil and enlarging the pocket. This works well. You could also reload with the English primers by importing them or getting them through A&F.

The .405 goes about .410 to .4135-inch groove diameter and the .404 goes .424 inch for .423 bullets. So the .405 bullet in 300 grains is too small but you can import the slugs as I have done in .400 and .465 as well as .360 from Britain. The cartridge also works very well with cast bullets and O'Neil has successfully used paper patched bullets in his .404 magnum.

.270 DON CARTRIDGE

The boys in the benchrest game will never stop experimenting until they find the perfect cartridge. After developing many fine .22's, they have gone to the .25's and are now working with the .270's.

The .270 holds more powder than is necessary for target shooting. That is the reason experiments are being conducted with the 7-mm. case necked down slightly to .270 caliber. The main reason for this change undoubtedly is the availability of bullets; otherwise there wouldn't be enough difference to warrant it.

Harvey Donaldson, the well-known experimenter of Fultonville, N. Y., has what he calls the .270 Don International. G. R. Douglas, the barrel-maker of Charleston, West Virginia, has made up reamers for the cartridge. Part of the experimenting has been with the very fine 110-grain Sierra bullet in a rifling twist of 1 turn in 15 inches. It's too early to predict the final outcome, but results have been encouraging. Similar cartridges have been developed by Bill McQuerry and Fred Gray of North Little Rock, Arkansas, and they are enthusiastic about the results.

L. R. Wallack, Jr., of Langhorne, Pennsylvania, has also been playing around with a similar cartridge called the .270 Helldiver. With light bullets such as the 110 grain, the 14-inch twist or even 15-inch twist rifling seems adequate. With the standard .270 caliber, a 14-inch twist has proven adequate on certain occasions using 130-grain bullets.

Future experiments will prove just how good this particular cartridge is. All who have had any experience with the .270 know of the possibilities with it, especially in a smaller capacity case.—A. H. BARR.

USING SALVAGED POWDER

I have several pounds of salvaged powder, Remington .30-'06, Raf. Lot 175, average charge 48.7 grains using 150-grain bullet, velocity 2,760 feet per second at 53 feet. Can you advise me how to mix this powder for use with 46-grain Hornet bullets and 6½ Western primers?—ALBERT B. ARRINGTON, Corpus Christi, Texas.

Answer by Al Barr: Inasmuch as I do not use mixed lots of powder myself, I will not

Photo by Maslowski from National Audubon Society

Match wits with Mustela

Meet *Mustela longicauda,* the long-tailed weasel. After he puts away the rest of that rabbit, his next objective may be some unlucky farmer's henhouse. There he can kill to his heart's content, slashing the throats of a score or more hens before his blood lust is sated.

No doubt about it—he's a predator. The sportsman can have a good time matching wits with *Mustela,* for the weasel knows all the tricks of flight and concealment. Don't try to eliminate the weasel in your area completely, however, for he also helps maintain nature's balance by keeping field mice and rats in check. See your local game regulations, too, before shooting the weasel.

Besides controlling predators like the weasel, good sportsmen can do their part in conserving our game supplies by joining and actively supporting local and national conservation organizations.

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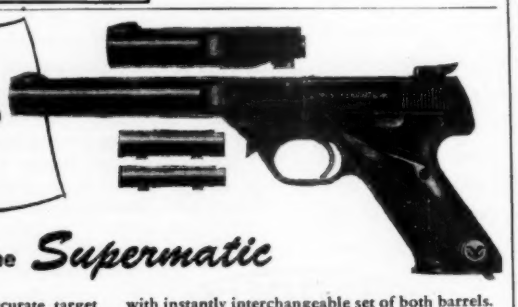

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recommend that practice to anyone else. The powder you have apparently is somewhat similar to DuPont No. 3031, but frankly when you break down any load and salvage the powder you would have to develop your own combinations. We do not feel it safe to recommend charges of such powders. Anyway, the powder will definitely be too slow burning for use with the .22 Hornet cartridge. DuPont No. 4227 or Hercules 2400 are about the only suitable powders available for the Hornet.

SHARPS PEPPERBOX

A friend of mine recently showed me an old and unusual pistol. It is approximately 5½ inches long and 3½ inches from bottom of butt to top of hammer spur. It has four barrels arranged in a square and I would guess the caliber to be .32 rimfire. There is a latch at the bottom front of the frame and pushing upward on it permits the barrels to be slid forward for loading and unloading.

The frame is of brass and is heavily engraved on both sides and bottom. From the less-handled points it appears to have been nickel-plated at one time. On the right side directly under the breech block and contained within an engraved circle are the words "C. Sharps & Co., Philda., Pa.". Directly opposite on the left side are the words "C. Sharp's Patent 1859". On the bottom of the butt is the number 14975. This same number appears on the slide under the barrels.—CHARLES R. FULLER, Bayside, N. Y.

Answer by H. C. Stith: The Sharps Company of Philadelphia specialized mainly in the famous Sharps rifles. However, the company also manufactured handguns, of which yours is one. It appears that you have the Sharps Pepperbox No. 3 in .32 caliber rimfire. Two other Sharps Pepperboxes were also manufactured, the No. 1 being in .22 caliber rimfire, the No. 2 in .30 caliber rimfire. The weapons were used mainly for personal defense due to the fact that they were small and could easily be hidden in the clothing.

Christian Sharps founded the "Sharps Rifle Manufacturing Company of Hartford, Connecticut". The company was in operation from about 1848 to 1859 at which time the firm name was changed to "C. Sharps and Company". At that time the company was also moved to Philadelphia where it operated until 1863. Again the firm name was changed, this time to "Sharps and Hankins"; this company operated in Philadelphia from 1863 to about 1870. About 1870 the firm transferred to Hartford, Connecticut, and failed shortly thereafter. In 1874 the firm was reorganized as the Sharps Rifle Company and operated in Hartford until February 1, 1876. The firm then transferred to Bridgeport where it remained in operation until business was discontinued in October, 1881.

5.6X61 VOM HOFE SUPER EXPRESS

I have a rifle marked 5.6x61 Vom Hofe and would like to secure ammunition for it. Can you help me?—NORMAN H. FEASEL, Elko, Nevada.

Answer by Phil Sharpe: The 5.6x61 Vom Hofe is an interesting rarity, and takes the hard-to-get .228 bullets. Unfortunately, the problem of making brass is rather difficult, since the use of .30-'06 brass, which is somewhat small at the head, leaves the rear of

the case unsupported in the chamber. Some lots of '06 brass can be safely fire fitted or expanded, but should you get into weak brass you would have serious trouble. Due to the oversize of the chamber, there is not much you can have it rechambered for, and because of the fast twist the rifle requires a much heavier bullet than is generally available. If I were you, I'd dispose of this gun to a collector.

RELOADING FOR LEVER-ACTION RIFLES

Is it practical to reload for a Model 94 Winchester .30-30? I have been led to understand that the chamber on these guns is over size in order to eliminate extraction problem and that this condition makes it difficult, if not impossible, to reload with any degree of success. It is understood, of course, that cartridges would be resized in the neck only—ROBERT C. BARRY, Kansas City, Missouri.

Answer by Elmer Keith: To properly reload for the .30-30 lever-action Winchesters or similar rifles, you must full length resize the cases because of the stretching and swelling of the cases with full loads. Then the cases must be trimmed to proper length before reloading for best results. It is not impossible at all but requires a good bench tool and case trimmer for best results. You should get fair accuracy with the 110-grain pest load but much better accuracy will be attained with the 170-grain bullet.

GERMAN SCOPE MOUNT

I am interested in procuring a scope attachment to fit the bridge mounts of a German Krupp-Laufstahl rifle with a ribbed barrel. The gun has the usual snap tapered wedge to lock the rear scope mount to the bridge mount.

An article that appeared in the RIFLEMAN (April 1941) stated the mounts are of the regular four-hook type clamped to solid ribs integral with the scope tube and hooking into foot plates, both of which are let into the top of the bridge.

Where would I be able to purchase a scope attachment such as this one?—CHARLES W. ALLEN, Chicago, Illinois.

Answer by Al Barr: The mounts to which you refer are a special type made in Germany. The only place in this country, to my knowledge, that you obtain them would be from some outfit like Schmidt Precision Products, Rt. 1, Box 150M, Escondido Canyon Rd., Saugus, California, which specializes in making mounts for foreign scopes. The mount is for use with foreign telescopes having lugs on the bottom of the scope tube and they naturally are special and would have to be made up for each individual combination.

FLAME GRAINING

In finishing a curly maple stock, how is the best way to color it? I have heard of burning it with a torch.—RAY PHILLIPS, South Wenatchee, Washington.

Answer by H. C. Stith: In the case of good grained maple, it is not necessary to stain or darken the wood. The color and figure of the wood should be left as is. Finishing can be done by applying a very thin

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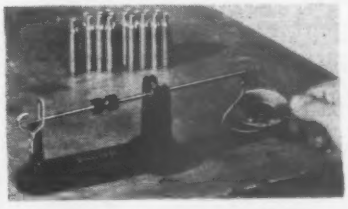

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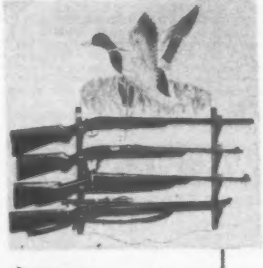

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coat of varnish or lacquer. If your maple stock is very white, however, as most maple stocks are today, then you may use the method of flame graining to color the stock.

The method is described exceedingly well in the book called *Gun Stock Finishing and Care*, by A. Donald Newell, which may be obtained from the Samworth Publishing Company, Georgetown, South Carolina, at a price of $4.50. The following information on flame graining is taken from that book.

The necessary tools are a gasoline torch, a Bunson or Meker burner, or hand blast torch of some sort. The flame should be extremely hot and no free carbon should be liberated. Instead it should be blue or nearly colorless. This will insure getting maximum heat from the flame and also will not soot the wood where you want it burned. The stock to be figured must be free from any finish whatsoever. All sanding, shaping, and cutting must have been done previously to coloring and the stock must be ready for the finish. Place the stock in a checkering frame so that you can turn it freely enough for easy handling. With the flame at least two or three inches long, sweep the flame over the surface of the wood. Return slowly and repeat until the wood takes on a dark enough brown to show up whatever figuring that will come out. Turn the stock slowly as soon as one area has been completed and continue the turning and the flame treating until the whole stock is covered.

Newell cautions that you should be very careful around corners and edges such as on the cheekpiece and the edges of the inletting. These very delicate corners will char black very easily. When you come to these places turn down the gas and sharpen the flame as much as possible. When the stock is completely brown, the flame, of course, is turned off and the entire stock surface sand papered lightly, not enough to remove any color of the wood but only enough to remove loose, burned surface fibers. When the surface has been smoothed sufficiently, thin a little linseed oil with turpentine and soak the stock with it. Just one thin bath of this mixture is sufficient.

When the surface of the wood has absorbed as much of the oil that it is going to, wipe off all that you can remove with a dry rag. Allow the stock to dry for a couple of days, then apply whatever finish you intend using. Make certain that the wood is completely dry before applying the finish. If there is a sticky coating of linseed oil, the finish will not have an adhesion when drying.

Newell explains this operation exceedingly well and I would suggest, if it is possible for you to do so, you obtain a copy of his book. He suggests a number of various gun stock finishes which work out very well and are exceedingly popular.

BASE FUSING WITH LEAD BULLETS

If I have a cartridge loaded with a plain base lead bullet and a charge of powder that will give that bullet top velocity without fusing, could a cartridge be loaded with the same powder charge but a much lighter bullet without causing the bullet to fuse?

To be more specific, I am playing around

with the old .40-65 caliber, using the standard 260-grain bullet with 20 grains of 4759 powder. It shoots quite accurately and doesn't fuse the bullet, though I should estimate the velocity at about 1,500 feet per second. If I should use a light 170-grain bullet with the same 20-grain charge, I imagine I should get a velocity of maybe 1,800 feet per second or so, which is pretty fast for a lead bullet. Not considering the possibility of stripping, would I get fusing of the lighter bullet?—R. N. KESSERLING, Rochester, N. Y.

Answer by Elmer Keith: Loading the powder charge of 20 grains of 4759, that you have been using with the 260-grain bullet with every success, behind a light 170-grain bullet will not cause base band fusion. The pressure and heat will be less, not more. With that slow twist, I hardly think the bullet will strip; if it does show signs of stripping, you could increase the hardness of the bullet.

SO YOU HAD IT ROCKWELLED?

There seems to be an epidemic of inquiries from chaps who have taken almost any old rifle action, carried it into some shop, obtained a Rockwell "C" reading, and have been told that the action is "weak, strong, or stronger." As a result of this flood of inquiries, we undertook some research before assembling these comments. But it just seemed to support the same idea we had to start with: A Rockwell "C" reading is just a reading of a comparative test—it has nothing to do with *strength*.

The Rockwell "C" scale is intended, according to the Wilson Mechanical Instrument Company, Inc., makers of Rockwell testers, to be used to determine the relative hardness of hardened steel and hard alloys. There are A, B, C, D, E, F, G, H and K scales, all used for different materials. The familiar "C" scale is a reading obtained in a precision instrument which is a combination of heavy-duty arbor press, scale, and micrometer, coupled with a time control for applying pressure. The "C" scale reads from 20 to 80 in increments of 1. The instrument uses a spero-conical diamond Brale penetrator. Put into simpler words, this is a diamond point, cone shaped, with a rounded tip.

Materials to be tested for hardness are placed in the machine and a preliminary load of 10 kilograms (22 pounds) is applied. This presses the diamond point into the metal very slightly to take care of any surface roughness. A dial on the machine is quickly adjusted to zero with this load still applied, then a lever is pressed to apply a major load of 150 kilograms (330 pounds) for a controlled time in seconds. The dial is then read directly on the "C" scale. What actually happens is that the diamond point is pressed into the metal. Each point of Rockwell reading represents a penetration depth of .00008-inch—8/100,000ths of an inch. The higher the "C" reading, the harder the metal.

So you had that action Rockwelled? So what! All you know is how hard it is. What you thought you were getting was the strength of the action. In preparing this information, we consulted top metallurgists, toolmakers, the instrument makers, and top gunsmiths. All agree that a Rockwell reading has a definite bearing on the tensile strength of the metal—*but only if the alloy and method of heat treatment is*

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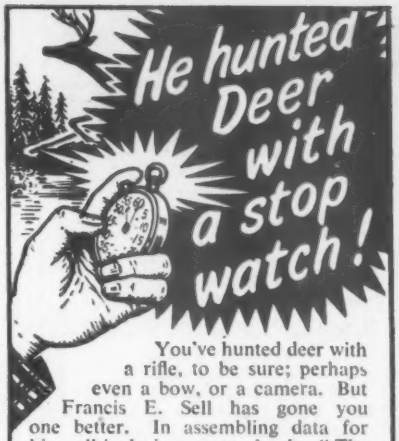

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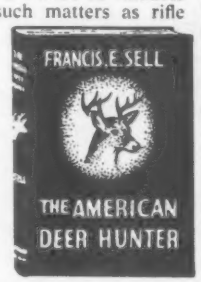

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The chief interest in the Rockwell test right now seems to come from the boys who have a cluck of a foreign military action made under the stress of wartime conditions, repeated bombings, shortage of quality materials, and lack of proper heat treatment. So they have it honored by a Rockwell test, and assume that it is safe. Rockwell machines cannot tell you. This would require a complete metallurgical test to determine the alloy, the purity of the alloy, the elastic limit, tensile strength, yield point, method of heat treatment, and a few other things. The cost of this diagnosis would be many times the value of the gun, and would require complete destruction in the laboratory.

Summed up: A Rockwell "C" reading on your unknown action is of absolutely no value in determining strength. If it reads too soft, it still might be strong, but the receiver wells for the bolt lugs would wear or set back in continued use creating excessive headspace. If it reads of proper hardness, quality of materials and heat treatment might be such that it would be excessively dangerous.

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The gun works smoothly and trigger pull isn't too bad—about normal for the average shotgun. It has noticeably nice-handling qualities. Patterning is also very good, ranging between 64 percent to 75 percent with different loads with the full choke barrel and between 52 percent and 68 percent with modified choke. With reasonably well executed checkering on the forearm and pistol grip, this very practical over-under shotgun retails at $165.00 complete. Only thing detracting from appearance is the figure-8 shaped band holding the two barrels together at the muzzle. For at least the limited use we put it to, the shotgun functioned quite reliably, even the single selective trigger.—A. H. BARR.

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elevation and fired groups, moving adjustments with each shot fired. Continuing in this fashion, moving up and down and right and left, we fired until a complete group of at least five shots was made at each setting. Even though Bear Cub scopes do not have click adjustments, the scopes can be zeroed, the adjustments changed, and then rezeroed very accurately. Recently we used one of the 4X Bear Cub scopes, moving the adjustments twelve minutes in either direction after every shot fired, and in this way proved the reliability of the adjustments. Not until the extreme adjustments were made did we note any variable change in the dependability of the graduations. When moving either the windage or the elevation turret six graduations with each shot fired, the movement was very dependable and accurate up to twelve minutes in either direction. Beyond that point we did not always get precise separation between groups. As all this firing was done at 50 yards, each graduation represented ½ minute or the six graduations represented 3 inches between groups. For any movement up to six minutes in either direction, the separation of the groups varied only from 2.9 to 3.25 inches. A total of nine separate groups were fired. When increasing the movement six more minutes in either direction the spread between the groups did vary as much as 1 inch, or from 2.5 to 3.5 inches.

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RELOADING THE .35 REMINGTON

I recently acquired a Marlin .35 Remington caliber short-barreled rifle, which I like very much.

In looking through the Ideal Handbook and Sharpe's book on reloading I fail to find listed loads using lead bullets. I do not know anything about reloading for this cartridge, but think I would like to use Ideal bullet 357446 or Ideal bullet 358429 Keith. I would like to get a velocity of about 1,600 feet per second and a load that will shoot accurately at 100 yards or so.—Walter Quinton, Heyworth, Illinois.

Answer by Elmer Keith: I am afraid my solid 173-grain .38 Special bullet will not work well in the .35 Remington on account of the forward groove diameter band, which would probably not seat in the rifle throat at all. I think you had best order Ideal No. 358315 200-grain gas-check bullet made especially for the .35 Remington. You can use it either with or without the gas-check cup as you choose, but for velocities over 1,500 feet per second the gas-check cup is an advantage. Now for charges. With the gas-check cup you can use 20 grains of 2400 for 1,830 feet per second; a charge of around 17 grains of 2400 should give you just about 1,600 feet per second either with or without the gas-check. For a higher velocity load of about 1,910 feet per second use the gas-check cup and 24 grains of 2400. Also 29 grains of Lightning will give you just over 2,000 feet per second with the gas-check on the same bullet. Resize your cases full length and trim them to proper length if they stretch, either with a case trimmer or a file. Get a copy of the Ideal Handbook for instructions from Lyman Gunsight Corp.

BULLET MOLD TEMPERATURE

I've just bought an Ideal number 311413 bullet mold and I have the mold properly broken in, but, when I cut the sprue off the base of the bullet, the cutter tears a jagged piece of metal from the base of the bullet. Can you tell me what I'm doing wrong with the mold that can be corrected? I am using a one-to-ten tin and lead mixture. I have tried using lubricant on the sprue cutter with no success.—CALVIN A. SNYDER, Allentown, Pennsylvania.

Answer by Al Barr: The trouble with your bullet mold is that you have the lead too hot or you are letting the mold get too hot. In other words, after filling the bullet mold cavity do not attempt to cut the sprue for four to five seconds if the mold is quite hot. Another kink which I have used in casting bullets where the lead is fairly hot or the mold quite hot, is to first fill the cavity and, without cutting the sprue, dip it in and out of a pan of warm water. Dipping it in the warm water for only a second or two will help set the lead and you will not get the torn base. Don't do that too often though, but a little practice will tell you how often it should be done.

QUESTION IN DUPLEX LOADS

There is one problem in the use of flash tubes that has never been covered in the RIFLEMAN and I would appreciate it if you would cover it for me. Is the flash tube filled with powder in Duplex loading or is it kept empty, and if so, how? I can conceive of the idea of placing sodium nitrate treated in brown paper over the end of the flash tube, but seating a bullet down tight on the powder would drive some grains through it and the load would run into the tube.—GEORGE N. HERBERT, M.D., Walla Walla, Washington.

Answer by Elmer Keith: The flash hole in the Duplex Tubes that O'Neil furnished me were too small for I.M.R. powders to enter, so there is no powder in the flash tube. I was sent to Frankford Arsenal during the war to Duplex .50 caliber and gave them 202 feet more velocity for normal pressures in that month I worked there. The brass tubing that I wanted was not available and I used steel tubing that had a too large inside diameter and .50 caliber powder would enter. I plugged the tubes with cotton at the mouth to keep the powder out of them as that was the only alternative. C. M. O'Neil, Alberton, Montana, made all the rifle cases up that I have used and controls the patent on the development. Maybe you can get him to furnish you some Duplexed cases. O'Neil screws the tubes into the case head from the front with a split collar wrench and has also devised a decapping pin and sleeve for them.

UNITED STATES PROPERTY

In the November issue you state U. S. Property .45 Automatic Pistols were never sold to the public. I have one marked "United States Property" with the U. S. Ordnance Certificate of Ownership to a member of the National Rifle Association.—D. C. VINCENT, West Stockbridge, Mass.

Answer by General Hatcher: Our correspondent is right—the records of the DCM show that many years ago a very few M1911 .45 pistols were sold to civilian marksmen. The total number so sold was only 57 pistols, and none was so sold to

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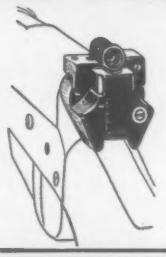

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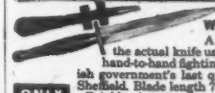

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8x57 Mauser, 124, 159 & 196 gr. softpoint	3.75
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9.3x57 Mauser, 285 gr. softpoint	5.50
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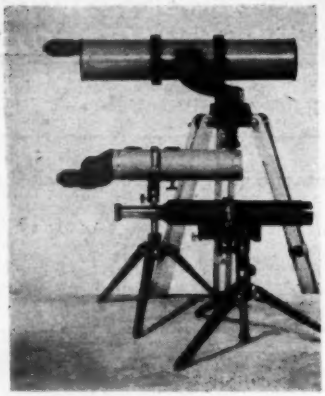

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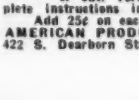

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civilians after 1922. Some few were, however, sold to officers prior to 1945. If you have an Ordnance bill of sale covering your "United States Property" gun, you are OK.

AMMO FOR .44-40 REVOLVERS

I have a Colt Bisley, No. 289684, in .44-40 caliber, for which I can get only ammunition made for rifles, as it mentions nothing but rifle on the box. This stuff gives me quite a rap in the ears everytime I pull the trigger, and I would like, if possible, to eliminate that result. A friend says that strictly revolver ammunition is made. Is this so?—LEONARD B. ANDERSON, Sitka, Alaska.

Answer by Elmer Keith: I have never seen any .44-40 ammunition marked for revolvers, but for years I have shot plenty of .44-40 standard 200-grain soft-nose low-velocity metal patched stuff in them. The ammunition marked High Velocity is definitely not made for revolvers and gives pressures too high for safety in them.

LOADING FOR 6.5 DUTCH MANNLICHER

I have a couple of 6.5 x53 mm. Dutch Mannlicher rifles. After a bit of study I came up with the following answer as to reloading. As the cartridge is rimmed I found the .303 British, which is a rimmed cartridge, is made to order for resizing to this caliber. It is a little longer and must be trimmed to length and the shoulder has to be pushed back, otherwise the dimensions, except the neck diameter, are all O.K. The .30-40 Krag is too large at the base and the rim is too large in diameter.

The overall length of the cartridge when a Speer .263 bullet is used must be 3.218" for the bullet to touch the leed of the rifling. When a 120-grain bullet is used and seated 1/10th inch in the cartridge case, the bullet must jump about ¼ inch to reach the rifling.—CLARENCE WHEAL, Muncy, Pennsylvania.

WARNING TO PISTOL PURCHASERS

Several firms are offering the .45 pistol model 1911A1 as surplus. Since these were made by Remington and Ithaca, they are all stamped "United States Property." A lengthy investigation indicates that these sales were not made through any government agency. It appears that these guns were supplied outside this country under Lend-Lease and the foreign surplus returned for sale through trade channels.

Firms selling these are legitimate dealers, but the guns offered can be presumed to be government property. It is suggested that buyers obtain them only through a legitimate dealer and obtain from that dealer a signed sales slip bearing the serial number and make of the gun. Otherwise they could be subject to possible confiscation.—PHIL SHARPE.

LOADS FOR COMBAT MASTERPIECE

I have lately acquired a new S&W Combat Masterpiece. What is the highest pressure this gun will stand as a steady diet? Can I go up to 25,000 pounds consistently without injuring the gun? Is No. 2400 a practical powder in this 4-inch barrel?—D. A. COLBY, San Francisco, California.

Answer by Elmer Keith: I would not go over 25,000 pounds pressure as a steady diet for

that excellent Combat Masterpiece S&W. Your best bet in powder for a heavy load in the 4-inch barrel is unique, as No. 2400 needs a heavier charge than is permissible and, also, preferably a longer barrel. I would suggest the Keith hollow-point, or hollow-base bullet Ideal No. 358431 or 358439 backed by 5 grains of Unique.

GUNSMITH TRADE DOPE

Clever primer catching device to fit the Standard and Super Pacific reloading tools is now made by Frank Foster, P.O. Box 983, 600 Rencher St., Clovis, New Mexico. A folded, soldered piece of metal, the primer catcher fits around the shell holder of the Pacific tool, being anchored in place by means of two rubber bands. The holder can be readily removed from the tool so that spent primers may be disposed of. More permanent means of holding the primer catcher in place can be worked out by users. Complete for installation, the device sells for about $2.

Tilden hunting scope mount has been redesigned by the Tilden Manufacturing Company, 2750 N. Speer Blvd., Denver, Colorado, especially for use with hunting scopes such as the Stith 4X Bear Cub. The Tilden mount now comes with split rings to accommodate scopes with fixed elevation and windage bosses such as those on the Bear Cub scopes when they are equipped with internal windage and elevation adjustments. The same mounts should be adaptable also to the Lyman 4X Challenger scope. The mounts are made to the correct diameter for the 1.023 inch or 26 mm. tube diameter of the Bear Cub. The front base on the mount extends forward of the anchoring screws, which go into the receiver ring of the bolt-action rifle, permitting the 4X Bear Cub to be mounted far enough forward to give correct eye relief, which sometimes is a limiting factor with conventional mounts because of the location of the adjustment turrets.

Mossberg's telescope sight is available in a new model, 2M4, with internal adjustments and a newly designed all-purpose mount. Retailing at only $9.95 from O. F. Mossberg & Sons, Inc., 131 St. John Street, New Haven 5, Conn., the scope has coated optics and comes complete with a new side mount which has an adjustment to allow both low and high scope mounting on the rifle, either with or without iron sights. The new mount is a heavily constructed casting sturdier than the stamping design previously used. This little scope with internal click adjustments of ½ minute of angle per click for both windage and elevation can be used on all .22 rimfire rifles and others up to and including the .22 Hornet and .25-20 where recoil is not excessive. The adjustments are quite reliable for such a low-price scope.

Herman H. Heiser Company, the saddlery and sporting goods plant, has moved to a new location, 1024 Cherokee Street, Denver, Colorado.

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Saeco Precision—$14.50 (extra drum $4.00)
Belding & Mull Visible—$12.50; Lyman ... 12.50
Redding Powder Scale ... 11.95
Ideal Lubricator and Sizer—$14.50; Ideal Full Length Sizing Die—$4.00; Ideal Bullet Molds—$7.50; Blocks—$4.50; Lubricant—40c; Ladle—75c; Lead Pot—$1.25. Ideal Shot Shell Loading Outfit (with shot measure) ... 29.50
Wilson Case Trimmer—$12.00; Primer Pocket Reamer ... 4.50
Shell Holder—$1.25; Neck Reamer—$5.50; Burring Tool ... 2.00
Wilson Case Gauges—30 06, 270, 220, 257... 4.50
New Smiley Case Trimmer, #500. Complete for 5 Cals. ... 14.50
Complete Guide to Hand Loading, Sharpe... 10.00
Handbooks: Ideal #37—50c. New #38 ... .75
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BULLETS: SIERRA, WESTERN T & C, SISK, SPEER, HORNADY, and FACTORY. Limited stocks. Orders filled in rotation received.

When reloading supplies are available, we have them!
Shooters! Send your order to HEADQUARTERS for RELOADING for expert handling and prompt service.
Write for complete list (stamps appreciated)
Central N.Y.'s Largest Reloading Supply Service

PRECISION TOOL & GUN CO 303 E. UPLAND RD ITHACA, N.Y.

SLEEPING BAG BARGAINS by MAIL

SAVE UP TO 25% on DOWN, WOOL, KAPOK BAGS

There's a Down, Kapok or Wool-filled Alaska Sleeping Bag to fit every need, weather condition . . . and pocketbook! Built for rough use, these bags are weatherproof, water-repellent, warm. First choice of western timber cruisers, forest rangers, hunters, outdoorsmen since 1915. Lowest factory prices. Send for New Catalog describing 22 Alaska Sleeping Bag bargains, including Twin (pair model) Bags, Extra Large Bags (for big men). Also Air Mattresses, Duffle Bags, Sleeping Robes, etc. Wool Bags as low as $19.98. Down and Feather Bags as low as $23.98. Kapok Bags from $11.49. All merchandise guaranteed to satisfy or your money back.

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Alaska Sleeping Bag Co. Dept. AR
309 S.W. 3rd Ave., Portland 4, Ore.
RUSH FREE "Sleeping Bag Bargain" Catalog to
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NEW · Big · 2½ Inch · 22x · Spotting SCOPE

Haven't you always wanted one—a powerful, rugged spotting telescope at a common sense price? This is it—the brand new SUPER-LITE—22 Power—2½ inch Diameter. Entirely new principle gives more light and better resolving power than very expensive scopes of this size. Has coated achromatic lenses, corrected for color, spherical aberration and field curvature. No ghosts or internal reflections as with prisms. Length, extended 16 in., closed 13 in. Field view 2¼ feet at 100 yards. Tapered eyepiece. Built-in sight and sun shade. All metal, permanent black finish. Order today under money-back guarantee. Send only $24.75 for prepaid delivery to your home.

New Principle-Gives More Light!

See .22 Bullet Hole Easy at 200 Yds.
Only $24.75
Not a Spy Glass—Entirely New Design.

PROJECTION OPTICS CO., INC. Dept. 33. 330 Lyell Ave., Rochester 6, N.Y.

Re-Blue YOUR GUN
Instantly with one simple application of MINUTE-MAN GUN BLUE.
No heating—can't injure steel.
Send $1
Your money back if not satisfied.
NEW METHOD MFG. CO.
AR-51 Bradford, Pa. U.S. PAT. NO. 2,527,232

INVENTORS
When you are satisfied that you have invented a matter of value—write me, without obligation, for full information on what steps you should take to secure a Patent.
PATRICK D. BEAVERS
(Formerly RANDOLPH & BEAVERS)
Registered Patent Attorney
904 Columbian Building, Washington 1, D. C.

GUN BARGAINS

BRITISH ENFIELD .303 SPORTER $49.50 INCLUDING ALL CHARGES

Hi-Powered precision 6 shot bolt action .303 British ENFIELD repeater CONVERTED by expert gunsmiths into a Streamlined SPORT MODEL. Walnut stock. 26" Barrel. Blade foresight and aperture rear sight. Noted for its smooth action and ballistical properties. Makes ideal hunting rifle. Weighs only 8½ lbs. A chance to get a Hi-Powered proof tested SPORTER at a fraction of what they will cost this fall. .303 Enfield Ammunition made by Remington. 215 Grain. Express soft point. Shells permit reloading and using innumerable times.

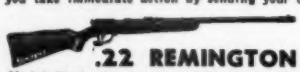
Other Fine Hunting Rifles

.30-06 Springfield, as issued except stock cut to Sporter, very good ---------- 52.50
.30-06 Springfield, same as above, Excellent ------- 59.50

30-06 WINCHESTER REMINGTON BARRELED ACTIONS $39.50

Total Price — No Extras (Taxes, duty, etc.)

These nationally famous Model P-17 barreled actions are As issued and their condition described "Very good to Excellent." These actions have been recently blued throughout and Proof tested to assure complete buyer satisfaction. They come ready for immediate use once they have been stocked. Here is your opportunity to make a substantial saving by fitting these wonderful barreled actions to stocks you choose yourself and get a precision, smooth working, dependable gun for 50% or less of normal retail selling price. No special skills required for doing a suitable job of stocking. Tools needed will be found in the average household. If you cannot get a stock locally the Central Pattern Works, Racine, Wis., offers brand new stocks for above actions for only $5.50. Or, you can buy a genuine walnut stock for $6.50 from Herter's, Inc., Waseca, Minn. They also will send you a free, illustrated manual "Fitting and Finishing Machine Inletted Stocks." Our supply of these famous Winchester and Remington Actions is small and to avoid disappointment urge that you take immediate action by sending your order today.



.22 REMINGTON $16.10

Model 514A chambered for .22 short, .22 long and .22 long rifle cartridges interchangeable standard or higher speed velocity. Adjustable rear sight, flat, integral bead front sight. Special safety features. Full size. One piece pistol grip stock genuine walnut. 42" length, weighs 5¼ lbs.

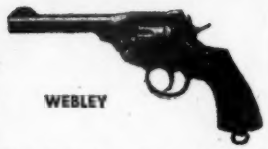
.22 SAVAGE-STEVENS $14.12

22" Round, Tapered, Takedown Barrel—Receiver one piece. For .22 L or .22 S High speed or Regular cartridges. Bolt Action. Gold bead front, sporting Rear Sight with Elevation adjustment. Length 32". Weighs 4 lbs.

IMMEDIATE DELIVERY

In spite of existing conditions and the press of business we feel that for a reasonable time at least we can assure immediate delivery of all orders received.

.455 WEBLEY $34.50



WEBLEY

Made by WEBLEY of England, supplier to the British Government, War Dept., Air Force, Navy and major Police Depts., Excellent condition. Recently proof tested. W. H. B. Smith in the NRA's book "Small Arms Of The World" states "One of the finest heavy duty hand weapons ever made, permits opening and extracting cartridges with one movement of the hand." These revolvers TRIPLE lock cylinder during firing. Truly a fine value at $34.50 FOB Chicago. No COD's please. Ammunition plentiful. Use any .450 or .455 Revolver ammunition suitable for Colt or S & W Revolver (not automatic). Or, we can supply Smokeless, Non-Corrosive 265 Grain Box of 50 for $5.35.

9MM German Auto LUGER $49.50

LUGER

The world famous Official German Army LUGER. Weighs 31 ounces! Their condition is "Very good to Excellent" These LUGERS have a Muzzle Velocity of 1150 ft. per second! Striking energy is 365 foot pounds! They have fixed sights, and special safety features. Overall length 8¾". 8-cartridge magazine. American and German made ammunition is available everywhere.

WALTHER 9MM P-38 AUTO $47.50

WALTHER

This is the Official World War II German Military Automatic so popular with German Officers. Barrel length 4¾"; overall 8½", weight 34 oz. 8-cartridge magazine. The P-38 is of very unusual design, with a double-action, so that after loading and closing the slide action, it can be fired by simply pulling the trigger! Condition "Very good to Excellent."

Unconditionally Guaranteed

Every gun is sold with the understanding that if you are not completely satisfied in every way return your gun within 5 days for a full unquestioned refund of your money. RIFLE cash orders shipped prepaid. C.O.D.'s include $5.00 deposit. HANDGUNS are all shipped FOB Chicago and C.O.D. orders cannot be accepted. In ordering hand guns you must state in your order you are not a minor, alien, fugitive from justice or been convicted of a crime of violence.

UNITED ARMS COMPANY • 9043 S. WESTERN AVE. DEPT. FA-1240, CHICAGO 20

Sportsman's STOW-AWAY

THE *PERFECT* CHRISTMAS GIFT

A necessity for any sportsmen. Gives double protection for valuable equipment. STOW-AWAY keeps guns, shells, golf clubs, fishing tackle, boots and sports clothing locked safely away. It eliminates accidents, saves space and keeps equipment handy and in place. Built of heavy guage steel with rounded corners and finished in beautiful, hammered bronze enamel.

Fitted for either 4 or 8 guns. Shelves are adjustable. Both ventilated doors lock. STOW-AWAY is 72" high, 40" wide 20" deep. Add $4.50 for 8-gun model.

Get STOW-AWAY for cabin, lodge or home.

See your sporting goods dealer or order direct. Shipped prepaid .... } $79.50

ATLAS MFG. CO. ST. PAUL 4, MINNESOTA

LOWELL BLAKE Distributor-BACKUS, MINN.

Wyoming Valley Gun Shop, Melvin A. Smith, proprietor, wishes to inform shooters that he has been unable to answer the tremendous number of letters concerning butternut blanks and stocks. He is sold out of blanks but has some wood drying, and will notify in a RIFLEMAN ad when it is available.

Phil Judd Company, 83 East Park St., Butte, Montana, manufactures barrel band swivels which may be fitted to almost any make or style rifle, carbine, or shotgun without drilling or marring the fore-end. Available with either one or 1¼ inch bow, the swivels are attached by bands open at the top that can be installed on a barrel or magazine tube without removing the sight. The screw which tightens to give a snug fit allows adjustment to any position on the barrel. Available in four sizes, the swivels cost $1.50 each.

BOOK REVIEWS

GUNS AND SHOOTING— A BIBLIOGRAPHY

By Ray Riling

Once or twice in a hundred years an enthusiast produces a book which becomes a classic. The effort which goes into these labors of love is fantastic. Nobody really expects to make any money out of them, but they are books which people desperately need. To the small number of classics in the hunting and shooting field comes a new one, this annotated listing of 3,000 books, American and foreign, on guns and shooting through the ages to the present day.

Ray Riling has prepared a definitive work, of tremendous practical value to anyone who reads and uses books—accurate, scholarly, and readable. It is more than a mere list of books described in bibliographical terms. It is a mine of information on every aspect of the shooting game, containing comments on books, authors, publishers, and so-called facts which will force a revision of many accepted beliefs.

The books listed all deal with gunpowder in one way or another, and include works on sporting arms and ammunition, artillery, gun-making and gunsmithing, bombs, fireworks and rockets, the history and development of firearms, ballistics, field and target shooting, such sporting magazines as the AMERICAN RIFLEMAN and such shooter's catalogs as *The Ideal Handbook*, right up to *Gunsmithing Simplified* by Harold MacFarland, published in December 1950.

The book is arranged chronologically with the authors listed alphabetically under each year from 1420 to 1950. There is an alphabetical index of authors, and a particularly valuable separate listing of nearly 300 pseudonymous sporting writers with their real names. The 24 pages of illustrations show pages of famous books; illustrations from books; weapons; advertisements; and rare books. The binding is luxurious and tasteful.

All in all, this is a superb work, showing meticulous research, a vast knowledge of the field, and a deep understanding of what information is needed by arms and book collectors, technicians, and students.—RICHARD MCCLOSKEY.

(Published by Greenberg, New York City. 475 pages, illustrations. $15.00.)

THE ARMS CHEST

GENERAL REQUIREMENTS APPLICABLE TO CLASSIFIED ADVERTISING

1. Rates: 25 cents per word including name and address—minimum charge $3.00. Advertisements *must be accompanied by remittance*, addressed to "The Arms Chest," American Rifleman, made payable to "National Rifle Association"—1600 Rhode Island Ave., Washington 6, D. C. *Insertion will not be made until payment is received.*

2. Closing Date: All advertisements must be received with advance payment by not later than the 1st of the month preceding date of issue. (Example: April 1st for the May issue. Ads received after April 1st and not later than May 1st will be inserted in the June issue.)

3. All Ads Subject to These Conditions: We reserve the right to edit all copy to conform with our standards and to reject or discontinue any advertisement which we consider undesirable.

4. Transactions Based on Good Faith: Deliberate misrepresentation, or violation of the codes of good sportsmanship and good business ethics, will constitute grounds for refusal of advertising, and may result in disbarment from N.R.A. membership.

5. Blind Ads Not Acceptable: Blind ads, with box numbers *only*, will not be accepted. Give your COMPLETE name and address, to insure prompt and certain delivery of all mail or telegraph replies.

NOTE: Postal authorities no longer are required to provide directory service for even first-class mail which does not carry a *complete* local address!

6. How to Count Numerals, Etc.: Groups of figures are counted as one word (example: .30-30, 250-3000, $150.00, $1.50). Abbreviations consisting of initials or single characters are counted as one word (example: W. H. Smith (W. H. counts as one word); H. B., meaning heavy barrel, etc.; W. H. and H. B. are one word) Hyphenated words are counted as two words (example: 20-gauge, pearl-handled, no-slip).

7. No Responsibility for Illegible Copy: The publishers are not responsible for errors in printing advertisements, due to illegible copy; type or print clearly all ads.

8. All Articles to Be Properly Described: To avoid misunderstandings the condition of every advertised article should be described in accordance with the following definitions, NEW—not previously sold at retail, in same condition as current factory production; NEW—DISCONTINUED—same as NEW, but discontinued model. The following definitions will apply to all SECOND-HAND articles: PERFECT—in new condition, in every respect; EXCELLENT—new condition, used but little, no noticeable marring of wood or metal, bluing perfect (except at muzzle or sharp edges); VERY GOOD—in perfect working condition, no appreciable wear on working surfaces, no corrosion or pitting, only minor surface dents or scratches; GOOD—in safe working condition, minor wear on working surfaces, no broken parts, no corrosion or pitting that will interfere with proper functioning; FAIR—in safe working condition but well worn, perhaps requiring replacement of minor parts or adjustments which should be indicated in advertisement, no rust but may have corrosion pits which do not render article unsafe or inoperable; POOR—badly worn, perhaps requiring major adjustments or repairs to place in operating condition.

9. WARNING TO PURCHASERS: The publishers *will accept no responsibility* for *any* unsatisfactory transaction involving articles which have not been described in accordance with the foregoing NRA standards. Purchasers or traders should therefore insist that sellers give clear descriptions of all articles, in accordance with these standards—*before* any transactions are consummated. Purchasers should also request shipment by express C.O.D., *with examination privileges;* the purchaser may (and should) then examine the shipment in his local express office—if unsatisfactory the article will then be returned by the express company to the shipper, at the latter's expense.

10(a). The National Firearms Act forbids the sale of the following: (*a.*) Full automatic machine guns. (*b.*) Rifles and shotguns with barrels less than 18 inches in length or 16 inches in the case of a weapon of .22 or smaller caliber. (*c.*) Handguns such as the Mauser or Luger automatic pistols, when such weapons are equipped with detachable butt stocks, except that all of the above may be sold by a Federal licensed dealer who has paid the special tax required by Section 3260, Internal Revenue Code. NOTE:—"Barrel length", as it applies to the above, is determined by the insertion of a cleaning rod from the muzzle until it comes to rest against the face of the closed breech.

(b). In addition, the NRA has adopted a policy of not accepting advertisements covering small pocket handguns, or any handguns having barrel lengths of 2 inches or less, which have no practical value as target, police or military weapons.

11. Fair Trade Laws: Advertising will not be accepted for articles to be sold in violation of Fair Trade laws, after the manufacturer has advised the NRA that such violation exists.

FOR SALE

INVENTORS—IF YOU BELIEVE YOU have an invention, we can make a preliminary search on your invention and advise you whether we think it can be patented. Send for copy of our Patent Booklet "How to Protect Your Invention" and "Invention Record" form. No obligation. McMorrow, Berman & Davidson, Registered Patent Attorneys, 251-D Victor Building, Washington 1, D. C.

FOR SALE: ARMS LITERATURE—OLD Catalogs—Books—Pamphlets. Send for New Bargain List and Information card. Hugh Smiley, Henniker 10, New Hampshire.

.38 SPECIAL WADCUTTERS, RELOAD, $2.00 per C. All DuPont powders in stock, immediate delivery, $2.10 per lb. Speer bullets, all calibers, Sierra, Hi-Precision, Pearson. Gunsmithing, Blu-Blak bluing. Rifle stocks, $37.50 up. Shotgun stocks, inquire price. Custom rifles $99.50 up. Scopes mounted free if purchased here. All work 100% guaranteed. Wyoming Valley Gun Shop, 259 Carey Avenue, Wilkes-Barre, Pennsylvania.

"RIFLEMAN" 115 COPIES; 1938 UP, $14.00. Bill Radzinski, 5020 Blackstone, Chicago 15.

SINGLE SHOT RIFLES, ACTIONS, PARTS, etc., also .300 and .30 Enfields. List 15¢. James Grant, Van Wert, Ohio.

ARGUS PRISMATIC 20-POWER OBSERVATion Telescopes, surplus stock, excellent condition with coated optics, $59.50. Public Sport Shops, 11 S. 16th Street, Philadelphia 2, Pa.

.22 CUSTOM VARMINTER MAUSER, PERfect, Weaver K2.5-6x attachment, $200.00. Winchester K- Bee, excellent, Unertl 4x Varmint Scope, Lyman dies, 400 cases, $100.00. W. J. Sprow, Jr., Milan Road, Sandusky, Ohio.

.300 SAVAGE 99 EG SCOPE, EXCELLENT, $150.00. A. K. Warren, Box 186, Albuquerque, New Mexico.

EVERY SHOOTER EXAGGERATES. LIARS' Lodge, 108 South Main, Las Cruces, New Mexico, was established to provide a haven for sportsmen. You are invited to send for your free official membership card today. Of course, we do the finest gunsmithing in the southwest and we will send you a free catalogue to prove it.

SMITH & WESSON, MILITARY AND POlice Model, brand new revolvers, cal. .38 Special, 4 and 5 inch barrels, $56.50. Colt Target Model, .22 cal. Woodsman Automatic Pistols, 6" barrels, brand new, $70.00. Public Sport Shops, 11 S. 16th Street, Philadelphia 2, Pa.

LARGEST AND FINEST STOCK OF COLlectors' arms in America. Visit our Shop or write us your wants. The House of Guns, Morris Plains, New Jersey.

FREE COPY OF AMERICA'S LARGEST GUN list. Published monthly. Write—Shotgun News, Columbus, Nebraska.

FORMULA 44-40—INSTANT, PENETRATING gun bluer—Sure cure for "Tired" looking guns. Doesn't harm old blue, one easy application. Recommended by all who use it, results guaranteed. $1.00 per bottle. Numrich Arms Company, Dept. 111, Mamaroneck, New York.

DERRINGERS, POWDER FLASKS, ALL types Long Guns. Wm. M. Locke, 3607 Ault Park Road, Cincinnati 8, Ohio.

BULLET TRAPS—SAFE AND EFFICIENT with .22 caliber L.R. and all hand guns including .45 caliber. Full 16x16" opening. Complete with removable legs, $25.00, F.O.B. factory. Freight shipping weight 65 lbs. Please send check or money order. Wire Rope Products Co., Winsor Avenue, Hamilton, Rhode Island.

ELECTRIC PENCIL: ENGRAVES ALL METals, $1.25, postpaid. Beyer Mfg., 10511-Z Springfield, Chicago 43.

COMPASSES WATCH TYPE GOV'T. SURplus, jewelled, brand new, value $4.95, Special $2.25, Postpaid. Compasses, Lensatic, Belt type, Gov't. Surplus made by Gurley, value $12.50, special $2.95. Public Sport Shops, 11 S. 16th Street, Philadelphia 2, Pa.

500 ANTIQUE ARMS OF ALL TYPES. Please advise your wants. Wm. M. Locke, 3607 Ault Park Road, Cincinnati 8, Ohio.

WALNUT BLANKS: RIFLE $1.50, SHOTgun, $1.00. Fancy Burls upwards. Finished Stocks, Mausers, Springfields, $15.00. Browning, Remington Autos., $8.00. E. D. Bray, Winfield, Iowa.

190 PAGE PROFUSELY ILLUSTRATED catalog crammed with antique and modern pistol, sword, dagger, etc., values sent on receipt of 50¢. Robert Abels, R860 Lexington Ave., New York 21.

BIG CATALOG, ANTIQUE GUNS, $1.00. 475 photographs. Satisfaction guaranteed. G. B. Hebard, Knoxville, Illinois.

NAVY OXFORDS, GENUINE U.S. SURPLUS, finest black calfskin, famous makes, specify size, $7.95. Check or money order. (Add 50¢ for postage and handling.) AR Rudolph's, Atchison, Kansas.

GUN RACKS, SOLID WALNUT, WALL type, self-leveling, new, for three guns, $6.95; for four guns, $9.95. Public Sport Shops, 11 S. 16th Street, Philadelphia 2, Pa.

FABRIQUE NATIONALE DELUXE RIFLES. The finest in hand fitted and hand finished rifles. For the discriminating shooter who wants the best. "Randall" 100% hand made knives. The world's finest. "Hensoldt" scopes and Roof Prism binoculars. Life Member. Sam Friedman, 782 Pelham Parkway, New York City.

SERVICEABLE SA COLT PARTS: HAMMER $4.25; trigger $1.50; gate $2.25; trigger guard $4.50; ejector head $2.00; mainspring $2.00; screws 35¢ each; hand w/spring $2.00; .45x5½" barrels, pitted $3.25. 20-shot magazine for .30-06 Springfield $8.00. Parts for C&B revolvers. B. K. Wingate, Box 154, Carlisle, Pa.

NEW LIST OF MUZZLE LOADING RIFLES. Also cap and ball revolvers for shooting. 3¢ stamp please. Kimball Arms Company, Woburn, Mass.

Help a Friend -and Yourself!

Some items of shooting equipment are becoming increasingly scarce—and probably will be in very short supply for months to come.

Tens of thousands of your fellow sportsmen will be able to do little or no shooting this summer or fall because of the lack of basic equipment, or supplies.

If you have *any* surplus guns, equipment or accessories you don't need right now, we urge that you make them available to fellow shooters for their immediate use.

Perhaps *you* need something also—which might be secured thru a favorable "trade." So send us your classified ad copy, immediately, for the next "Arms Chest."

Final closing date for the May issue is April 1st; full instructions above.

CARPENTER INSURANCE SERVICE
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I am an NRA member. Please send me complete information about your low cost ALL RISK and PERSONAL ACCIDENT insurance.

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☐ Check here for details on CLUB liability, also available at low cost to NRA Clubs.

YOUR Name on THIS coupon may mean real SAVINGS

Every NRA member residing in the U. S. is eligible to enjoy this low cost insurance. Clip and mail the coupon today.

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Wilderness fishing and hunting in Canada's finest unspoiled bush country. Complete modern American plan camp, operated by N.R.A. Life member. Exclusive locations to assure an abundance of fish and game. Reached only by seaplane or cruiser, yet in constant touch with the outside by two-way radio. Top notch Indian guides, new Johnson motors. Make reservations now for early spring trout fishing and bear hunting.

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NORTHERN LITE CAMPS
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Lifetime Guarantee
(EXCLUSIVE OF PARTS)

3 DIALS
5 HANDS
2 BUTTONS

$9.95 Inc. Tax

Multi-purpose watch that measures distance, speed, time, moving objects. Used as Stop Watch or Timepiece. Has Sweep - Second Hand for full 60 Second count. Second Dial records up to 45 minutes. Third Dial then records up to 6 Hours. Seconds—Minutes—Hours, all recorded automatically.

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For sportsmen, professional men and women—timekeeper works when other hands and dials are stopped—separate movements permit dual use at same time.

RUGGED CONSTRUCTION

Precision workmanship and shock resistant features are added to enhance the value of this watch. Sold everywhere for as high as $17.00. Our low introductory price is only $9.95 total. (Gold plated $12.95.) Send check or money order and we prepay postage. Or sent C.O.D. plus charges. LIMITED STOCK!

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These are the Boots I Wear

Just ask a Paratrooper or ex-Paratrooper. He'll tell you that any Paratroop Jump Boot bearing the *Corcoran* label is the real McCoy. He knows. He wears them. He can tell by the feel of the superior leather and the genuine design and construction that Corcoran Boots are made to original Paratroop specifications . . . specifications that insure perfect comfort and longer wear under toughest outdoor conditions.

It costs so little more for Perfect Paratroop Comfort

ONLY
$12.87*
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All Sizes
All Widths
4-13½; AA-EEE

for Genuine Paratroop Boots

*Due to necessity of placing this advertisement months in advance, price may be higher at time of publication.

Order by mail. Specify regular tan or oil finish. Give regular shoe size and width. Send check or money order for $12.87.

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BOX 55-C, STOUGHTON, MASS.

Send for.....

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HOLSTERS • BELTS • GUN CASES
SCABBARDS
MADE TO YOUR SPECIFICATIONS

Handsome, Heiser molded holsters made with California Oak tan skirting leather. Send 25c for new 1950 catalog (credited against first order).

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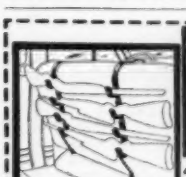

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The original RIFLE OR SHOTGUN CARRIER FOR YOUR AUTO

• NEW - SAFEST, most practical way of carrying your guns - cased or uncased. Clamps on or off back of front seat in a jiffy. Heavy polished aluminum frame, soft rubber lined.

4 gun carrier..... $6.95
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LIFER, (NRA), NEEDS DOUGH. MAKE OFFERS on 70 Bullgun .30-06. 70 Swift Target. 52 Standard. 52 Bull. 20x Supertargetspot. All as new. George Bodo. Moosup, Conn.

AMMUNITION — COMPLETE STOCK—U.S. and most foreign types of cartridges, including many of the really hard-to-get sizes for all kinds of firearms. Send 3¢ stamp for our latest 1951 Shooters' Ammunition List #4, combined with our new 12-page Hunting and Camping Equipment and Firearms Accessories Catalog. Our Cartridge Collectors' Catalog, the most complete publication of its kind, is invaluable for collectors, shooters and dealers. Contains 150 illustrations and 56 pages of essential data and specifications. Sent postpaid for 35¢. Life Member, Philip Jay Medicus, Dept. A-3, 18 Fletcher Street, New York 7, New York.

FOR SALE: WALNUT, CHERRY AND curly maple gunstock blanks sawed to patterns. L. G. Stockberger, Garrettsville, Ohio.

BLANK AMMUNITION; MOST CALIBERS; Special 50-70, 7.62 Russian, 43 Egyptian, $10.00 per hundred. Shell Shop, 3705 Sunset Blvd., Los Angeles, Calif.

SPECIAL SALE, PRISM BINOCULAR Cases, new, all leather, 6x30, price $5.00. All leather 6x30 holster type Binocular Cases, price $3.50. 7x50 all leather and hard rubberized Binocular Cases, price $7.50. Binoculars cleaned, repaired, realigned, coated and refinished. Ship for estimate. Public Sport Shops, 11 S. 16th Street, Philadelphia 2, Pa.

QUICK WAY BULLET PULLER $6.00 SET. Pulls all large rifle bullets .22 to .35 cal. For Pacific, Universal and Hollywood tools. Guaranteed. Agent for A.B.C. bullets. M. L. Whitesell, 1131 North Lincoln, Casper, Wyoming.

ANTIQUE FIREARMS, ACCESSORIES AND parts. All illustrated lists for a year, $1.00. Weisz, 100 South Uhle St., Arlington, Virginia.

20¢ BRINGS LIST OF BOLT AND SINGLE shot action military rifles. The House of Guns, Morris Plains, New Jersey.

RUBBER RECOIL BOOTS TO FIT ANY rifle or shotgun. Value $2.50 each, sale 3 for $1.00. Carryall, new, Gov't. Surplus, large canvas roll Carryall with two web straps and handle for Sportsmen, Ball Players, Campers and Travelers, value $12.50, Special $1.95. Jacobs Automatic Safety for Remington Automatic and Winchester Pump Shotguns, Model 12, new, value $7.95, Special $4.50. Public Sport Shops, 11 S. 16th Street, Philadelphia 2, Pa.

VARMINT, GAME, BENCH REST TARGETS Crow, Chuck, Squirrel, Rabbit, Turkey, Deer, Bench Rest. 6x9 inch Bond Paper. 25 each any three plus catalogue 19 different $1.00 Postpaid. Mail your order, Today. New Trenton, P.O. Box 51, Cincinnati 5, Ohio.

WINCHESTER '73, "ONE OF ONE THOUsand". Number 40631. Particulars on application. What offers? Dr. Thomas, PO Box 3808, Nairobi, Kenya Colony, British East Africa.

WATCH MAKERS LATHE, GOV'T. SURplus, complete with motor and foot pedal. Value $225.00, like new, $87.50. Public Sport Shops, 11 S. 16th Street, Philadelphia 2, Pa.

.45-70 SPRINGFIELD, UNALTERED, EXCELlent, with original bayonet and scabbard, $30.00. W. A. Harris, 295 E. Hazel, Mt. Vernon, Washington.

Samuel Colt's BIG STORY
TOLD ACCURATELY IN 5 PROFUSELY ILLUSTRATED MONOGRAPHS. THE SET $2.00
Descriptive folder sent on request
JAMES E. SERVEN · Santa Ana, Calif.

KLEIN'S

TWO GREAT SPORTS STORES
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4056 N. Cicero Ave.
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100% Satisfaction. Money-Back Guarantee

ORDER BY MAIL!

America's Finest

GUNS and FISHING TACKLE

Save at America's Lowest Prices

$31.45 Spinning Rod & Reel $19.95

Spinning is sweeping the country! Here's a top quality outfit at bottom prices. Outfit includes Latest Model AIREX "SPINSTER" REEL—world's most popular — plus H. I. ADMIRAL SPINNING ROD. Rod constructed of genuine Tonkin bamboo with selected cork handle, positive ring locking reel seat, finest steel guides, and carrying bag.

~~$31.45~~ BOTH FOR $19.95

Your Choice at One Low Price:

A. Spinster Reel and 6½' light action Admiral Rod for lures weighing 1/6 oz. to ⅜ oz. $19.95

B. Spinster Reel and 5¾' medium action Admiral Rod for standard bait casting lures weighing ⅜ oz. to ⅝ oz. $19.95

(Spinster Reel without Rod is $14.95)

Per 100 yards of Nylon Spinning line, 4 lures, and plastic utility box add $3.00 for Outfit "A," or add $5.00 for Outfit "B."

$20.00 SOUTH BEND REEL AND GLASS ROD

Both For $10.95

Here's a rod and reel bargain you can't beat! The South Bend $10.00 Model 400 Level wind and anti-backlash Reel (1950 disc. model), PLUS the 1951 model H.I. "Admiral" solid glass fiber 3½, 4, 4½, 5, or 5½ ft. Casting Rod.

Both rod and reel are only $10.95

$19.95 SOUTH BEND REEL AND ROD

Both For $13.95

Balanced! The famous South Bend $10.00 Model 750 "Perfectoreno" level wind and anti-backlash Reel (1950 disc. model), plus the 1951 Model South Bend Solid Glass Casting Rod, 3½, 4½, 5, or 5½ ft. length. (Rod separately is $9.95.) Medium or light action casting rod.

Both rod and reel, only $13.95

$27.00 GEP ROD AND SOUTH BEND REEL

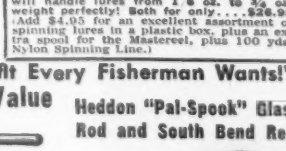
Both For $17.95

The "GEP" $16 Value Model 380 PISTOL GRIP Actionized Solid Glass Fiber Casting Rod. STAINLESS STEEL GUIDES, selected cork patented "Gep" pistol grip, 5, 5½ or 6 ft. lengths, medium or light action (state choice). Plus the South Bend sturdy, light weight, aluminum PERFECTORENO level wind and anti-backlash reel. Anodized, rich maroon aluminum—weighs only 6 oz. Plus nine bronze bearings and bushings. Has famous Perfectoreno spool control mechanism, capacity 100 yds. 18 lb. line (New 1950 disc. model $760—$1.00 value).

Both Rod and Reel, only $17.95

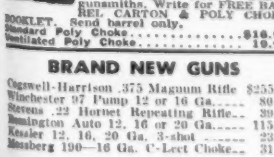
SOUTH BEND GLASS ROD AND GENUINE NICKEL SILVER REEL

$19.95



Balanced! Get THE FAMOUS SOUTH BEND PERFECTORENO Level Wind and Anti-Backlash Reel. (New 1950—$13.50 Value disc. model 775.) Heavily chrome plated nickel silver frame and level winding screw and carriage. Aluminum spool with arbor. Plus the NEW 1951 MODEL 2800 SOUTH BEND Solid Glass Casting Rod. Stainless steel guides. Hand-fitted offset handle with tightening knurled collar which locks reel and tip in fool-proof perfect alignment. 5, 5½ or 6 ft. lengths, medium live action. (Rod alone $15.75). BOTH ROD and REEL ONLY $19.95

H.I. REGISTERED FLY ROD AND SOUTH BEND AUTO REEL



Both For $19.95

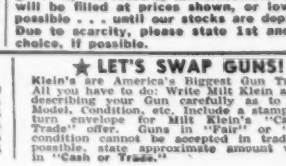
Save $11.05!

Horrocks-Ibbotson "Admiral" $20 value Fly Rod of select Tonkin Bamboo, plastic impregnated. Permanently registered by H.I.'s Custom Rod Department. Rod is 3-piece with extra tip, in sateen bag with fine aluminum case. State choice of 8½ or 9 ft. length, dry fly or wet fly action. Plus the famous 1951 Model 1130 Balanced South Bend Automatic Fly Rod Reel, beautiful maroon finish. (Reel alone is $11.00).

Both for only $19.95

Send $2.20 extra for 25 yds. Shakespeare "sp" level fly line.)

"MASTEREEL" AND GLASS SPINNING ROD



$40.25 Value!

Both For $26.95

Save $13.30 on this outfit! "Supreme Quality" Famous Airex Bache Brown "Mastereel" (Reel alone is $23.75). Spinning Reel, plus the Horrocks-Ibbotson $16.50 Value, 5¾ ft., 2-piece SOLID GLASS SPINNING ROD. This Rod and Reel will handle lures from 1/6 oz. to ¾ oz. weight perfectly! Both for only ... $26.95

Add $4.95 for an excellent assortment of spinning lures in a plastic box, plus extra spool for the Mastereel, plus 100 yds. Nylon Spinning Line.)

"The Balanced Casting Outfit Every Fisherman Wants!"

$22.50 Value

Heddon "Pal-Spook" Glass Rod and South Bend Reel

BOTH FOR $15.95

Only Klein's offers the new 1951 Heddon "Pal" Glass Casting Rod. Green hammeroid finish, detachable, offset aluminum handle with cork rear grip. Beautiful knurled aluminum collet forward grip. Patented new locking reel seat. Tip mounted with super chrome guides and tip top. Nickel silver ferrule. State choice of medium or light action, and 4½, 5 or 5½ ft. length. Plus the new 1950 South Bend $10.00 Model 750 Perfectoreno Level Wind and Anti-Backlash Reel. (Rod alone is $12.50.) Both Rod and Reel for $15.95.

New 1951 Poly Choke

9 Chokes in 1!

24 hour service!

Price includes installation by Klein's expert factory trained gunsmiths. Write for FREE BARREL CARTON & POLY CHOKE BOOKLET. Send barrel only.

Standard Poly Choke $16.95

Ventilated Poly Choke 19.95

★ A WORD ABOUT PRICES

Selling prices in this ad are based on merchandise we purchased before prices were generally increased by manufacturers. Orders will be filled at prices shown, or lower if possible . . . until our stocks are depleted. Due to scarcity, please state 1st and 2nd choice, if possible.

BRAND NEW GUNS

Cogswell-Harrison .375 Magnum Rifle	$255.00
Winchester 97 Pump 12 or 16 Ga.	80.85
Stevens .22 Hornet Repeating Rifle	39.95
Remington Auto 12, 16 or 20 Ga.	115.45
Kessler 12, 16, 20 Ga. 3-shot	23.95
Mossberg 190—16 Ga. C-Lect Choke	31.95

★ LET'S SWAP GUNS!

Klein's are America's Biggest Gun Traders! All you have to do: Write Milt Klein a letter describing your Gun carefully as to Make, Model, Condition, etc. Include a stamped return envelope for Milt Klein's "Cash or Trade" offer. Guns in "Fair" or "Poor" condition cannot be accepted in trade. If possible, state approximate amount wanted in "Cash or Trade."

SAVE 40%

SWEDEN'S FINEST

9 mm Luger "LAHTI" ... $29.95

Gun Scoop of 1951! Acclaimed by all the Gun Editors of the famous outdoor magazines as a terrific Bargain at the nationally advertised price of $49.95, and Klein's, due to a sensational purchase, brings Sweden's finest Automatic Pistol to a few hundred lucky gun lovers at the ridiculously low price of $29.95, complete with a $15.00 Value brass fitted leather holster, extra clip, clip holder and cleaning tool.

READ WHAT THE EXPERTS SAY ABOUT THE GREAT SWEDISH HUSQVARNA "LAHTI" AUTOMATIC PISTOL:

The American Rifleman: "The sample tested showed excellent accuracy and we think the 'Lahti' is an excellent value at $49.95." **Field & Stream:** "On the target range, the Remington 9 mm cartridge gave very light recoil, considering the punch at the hitting end. The 'Lahti' balances beautifully in the hand much like a Luger." **Hunting & Fishing:** "The 'Lahti' was exclusively a collector's item until a short time ago, and it was not unusual for a dealer to ask from $100.00 to $150.00 for a specimen in excellent condition." **W.H.B. Smith:** "Design uses a minimum of parts and a maximum of machining and is exceptionally strong." The "Lahti" is actually an improvement over the famous Luger. The "Lahti" is the finest gun made in Sweden's famous Husqvarna Arms Plant. Specifications: Model 1940, caliber 9 mm Luger, 4¾" Barrel, 9¼" overall, blued, 8 shot clip magazine, adjustable sights. Parts available. Pay only $6.00 down.

Guaranteed a terrific $49.95 value, now exclusively at Klein's in Very Good Condition inside and out, at only **$29.95**

The "Lahti" in Excellent Condition $34.95 — **The "Lahti" in Brand New Condition $39.95**

(Add $4.95 per box of 50—9mm Luger cartridges)

H & R 922

$27.25

Brand New! 9 shot, 22 caliber, shoots all lengths of 22 cartridges, regular or high speed. 1951 Model has many new features. State choice 2½", 4" or 6" barrel, blued. Low, low price, only ... $27.25

Chrome Plated Finish. Only $29.75

SCHIMEL 22 PISTOL

$20.00

Brand New! Best Plinker Gun (Carbon Dioxide Gas) Pistol. 22 caliber, powered by cheap CO₂ Cylinder obtainable everywhere. Complete with a good big supply of extra CO₂ cylinders and 22 caliber lead pellets. Write for FREE Schimel literature.

Postpaid, $20.00 complete

BROWNING SHOTGUNS

Brand New! Klein's selection of Belgian Browning Automatic Shotguns is America's largest! Get yours early! 12 or 16 Gauge, Standard $119.90. Lt. 12 or Sweet 16 $129.85. (Add $13.10 for Raised Rib. Add $21.80 for Ventilated Rib.) Over and Unders also available in 12 or 20 Gauge at $224.50 and up.

SMITH & WESSON

KLEIN'S selection of new SMITH & WESSON Revolvers include: S&W K22, K38 in Combat Masterpiece 4" or 6" Target Models @ $71.50 each: 38/44 — 6½" "Outdoorsman" @ $84.75; 357 Magnum @ $110.00; 32 Hand Ejector @ $58.00; 38 Terrier @ $58.00; 32 or 38 Regulation Police @ $58.00; 38 Military and Police @ $62.00 (state barrel length wanted).

MARKSMAN AIR PISTOL $5.95

NEW MODEL U. S. Army 45 Auto. Looks and Feels like the real thing! Accurate and Powerful. Shoots 177 caliber pellets, darts, and BB's. Generous supply included. Specially Priced $5.95

NEW HANDGUNS

Hi Standard Sport King 22 Automatic $44.00

Star 22 Auto. ..... Bri $49.75

Ranger 22 Auto 3 3/16" $39.75

RUGER 22 AUTO

$37.50

Brand New! For the shooter who must have the best! 10 shot 22 Long Rifle, 4¾" barrel, 8¾" overall, blued. Weight 36 oz. Perfect balance, amazingly accurate. STANDARD RUGER, BLUED $37.50

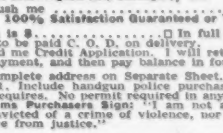
STANDARD RUGER, CHROME 45.00

"MARK I" TARGET RUGER, 6⅞" Barrel 57.50

BRAND NEW GUNS!

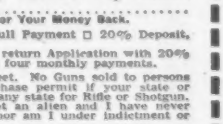
Marlin 39A Lever Action 22 Rifle	$ 60.85
Remington 513 Sporter 22 cal.	57.05
Rem. 721-270 or 30/06	92.35
Sav. 99EG 250/3000 or 300	111.50
FN Mauser 270 or 30/06	137.50
Rem. 722—222, 257 or 300	86.55
Win. 70—22 Hornet, 257R	126.50
Ithaca Pump, all gauges	91.16

COLT GUNS



KLEIN'S Selection of NEW Colt Guns include: Colt 38, 9 mm Luger or .45 Automatic, regular or light weight @ $65.00; Colt Conversion Unit @ $40.00; 22 Automatics: Challenger @ $52.50; Woodsman Target @ $70.00; Woodsman Match Target @ $85.00; Official Police 38 Special @ $65.00; Detective Special 32 or 38 @ $65.00; 22 or 38 Officer's Model Target "Special" @ $75.00.

I. J. TARGET 22



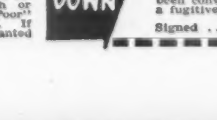
$22.45

Brand New! Made by famous Iver Johnson. 6 shot, 22 short, Long or Long Rifle caliber cartridges, 6" barrel, blued, walnut grips. Amazing Value, only $22.45.

IVER JOHNSON SUPERSHOT SEALED 8

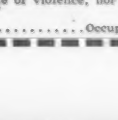
Brand New! Breakopen, 22 caliber, 8 shot, Target Model, 6" barrel. Only $37.75.

$16.00 AIR MATTRESS $8.95



Guaranteed durable rubberized closely woven duck. 25" x 72" popular size. Factory repaired slight "seconds." Absolutely waterproof and airtight. Regularly $16.00. While they last, a terrific bargain at only $8.95

WADERS $5.95 SPECIAL PURCHASE



Stocking foot Waders; worn inside shoes, boots. 100% Waterproof, tough, 12 Ga. Vinylite Olive Drab Plastic. State Size. Special $5.95.

Hooded Raincoat $3.99. Special Purchase. Extra long, full length slipover Fisherman's Rain Coat with Parka hood. Extends way below knees. Tough Vinylite Plastic. Not illus. Olive drab. State size. Only $3.99.

PAY ONLY 20% DOWN

KLEIN'S SPORTING GOODS, INC., Dept. 5-M, 227 West Washington St., Chicago 6, Ill.

Order By Mail!

Please rush me .....

100% Satisfaction Guaranteed or Your Money Back.

Enclosed is $..... ☐ In full Payment ☐ 20% Deposit, balance to be paid C. O. D. on delivery.

☐ Send me Credit Application. I will return Application with 20% Down Payment, and then pay balance in four monthly payments.

Write complete address on Separate Sheet. No Guns sold to persons under 21. Include handgun police purchase permit if your state or city so requires. No permit required in any state for Rifle or Shotgun.

Firearms Purchasers Sign: "I am not an alien and I have never been convicted of a crime of violence, nor am I under indictment or a fugitive from justice."

Signed ..... Occupation ..... Age .....

THANK YOU!

This Picture is Our Answer to the 2 piece Mount . . .

Thanks to the Gunsmiths and Shooters who wrote to us in answer to the January ad. The overwhelming response in favor of a 2 piece mount base was truly gratifying.

•

Write today for FREE New Folder A-3

New BUEHLER 2 Piece Mount is available in two models only which will be ready for shipment in April.

Model W—will fit the holes *IN ALL 3* new Winchester Model 70's—Standard, Super and Magnum. Model R—will fit holes IN BOTH Remington 721 and 722. Same prices as 1-pc. mounts.

See our Classified Ad on page 94

DEALERS • GUNSMITHS
Write for our attractive proposition

MAYNARD P. BUEHLER
ORINDA, CALIFORNIA

Distributed in Canada by
WESTERN SCOPE SERVICE
Calgary, Canada

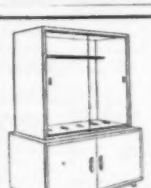
Lyman CHALLENGER

Sharper . . . brighter . . . a sight on game that means better shooting! Compare the Challenger!

4 Power Hunting Scope

Send for FREE Challenger folder. Complete Catalog 10c

THE LYMAN GUN SIGHT CORP. *Middlefield, Conn.*



MAKE YOUR OWN
GUN CABINET

FROM THESE SIMPLE, EASY-TO-FOLLOW PLANS AND INSTRUCTIONS—AND SAVE REAL MONEY!

The modern style cabinet illustrated or a conventional colonial style can be built of low-cost material with a minimum of home workshop tools already present in most households. Cabinets hold 6 to 8 guns behind sliding glass doors, have removable trays separated by dustproof partitions and contain built-in sliding work table which can be used for handloading. Don't put off owning that gun cabinet you've always wanted. Please your wife by storing your shooting equipment neatly and safely. State which design you prefer (modern or colonial). Send only $1.00 today for plans and instructions.

ART BRUNE North Fork, Idaho

The GUNSMITH BLACK FINISHING UNIT

Ideal for the man who wants to do the best in firearm refinishing. This is the same process used by manufacturers. Easy to refinish for profit. Comes complete with tanks, burners, supply of *PENTRATE* crystals and all equipment needed. Write for details.

HEATBATH CORPORATION
Springfield 1, Massachusetts

SINGLE ACTION COLTS
TUNED UP

Our special of hand-honing Frontier actions, color case-hardening and bluing at $16.50 cannot be beat. See Feb. ad (p. 81). The Enfield conversion special was so well received that word-of-mouth recommendations alone have swamped us with work. Special prices in effect to March 31, 1951. Use your head; deal with Ed. Year's bargain packed lists of gun buys $.25.

ED AGRAMONTE
201 Warburton Ave. Yonkers, N. Y.

SIGHTS
RETAIL AND WHOLESALE

We have the largest and most complete stock of ALL MAKES of sights, scopes and mounts in the U. S. Expert sight mounting and targeting. Fast and accurate service.

Dealers inquiries invited.
WRITE US REGARDING YOUR SIGHT PROBLEMS
THE ORIGINAL SIGHT-EXCHANGE
"Gun Sight Specialists"
P. O. Box J Paoli, Penna.

ATTENTION TARGET AND VARMINT Shooters. Precision Custom Loads. 30 years' experience. L. Shelton, Iowa Park, Texas.

TEN YEARS' GUN PROTECTION, ONLY $1.95. One quart can (32 oz.) U.S. Official Gun Oil plus four 6 oz. cans (24 oz.) U.S. Official Gun Bore Cleaner plus 500 unnapped twill cleaning patches, and brand-new U.S. Government chrome-plated oil can with dropper. All four for $1.95 postpaid. Oil and bore cleaner in original sealed U. S. Govt. cans. Special Offer: For only $1.00 more (total $2.95), we will include a brand-new rifle or shotgun carrying bag, made of tough war-surplus waterproofed 2-tone tent cloth, 7" wide x 48" long with convenient double handles. Life Member, Philip Jay Medicus, Dept. A-3, 18 Fletcher Street, New York 7, New York.

WINCHESTER CAL. .348, DELUXE MODEL 71, 200 shells, rifle like new $130.00. New Winchester Carbine Rifle .30-30 cal., 60 shells, $83.00. Remington .22 cal. model 241 auto load Speedmaster K4 Weaver scope, Redfield mount, 300 shells, rifle like new $85.00. Roy F. Olson, Marshall, Minn

NEW SHOTGUNS, IMMEDIATE DELIVERY. Prepaid and Insured. Winchester 12 pump, 12, 16, 20 gauges, $98.15. Winchester 12 Heavy Duck, 3" shells, $109.65. With Rib, $127.00. Winchester .42 pump, .410 Gauge, $85.45. Remington 870 AP Pump, 12, 16, 20, $80.80. Remington 870 ADL, Deluxe Grade, $92.35. Ithaca 37 Featherlight Pump, 12, 16, 20, $91.17. With Rib, $109.30. Remington 11, '48 five-shot Automatic or Sportsman '48 three-shot, 12, 16, 20, $115.45. With Ventilated Rib, $138.55. Belgian Browning Automatic 12, 16 Gauges, $119.90. Belgian Light 12, Sweet 16, $129.85. With Hollow Rib, add $13.10. Ventilated Rib, $21.80. Send Money order or check. Free Gun List and Illustrated Literature. Please specify type guns wanted. Trade-Ins Accepted. Discounts to Dealers. Mann's Sporting Goods Company, 100 Genesee Street, Utica, N. Y.

.219 DON MAUSER, CROWN ACTION, HOLlywood Dies, Gregoire H.B., Miller Single Set trigger superbly accurate, excellent. 20x Super target spot, Pacific Powder measure. 2-R-44½ Highwall Truline Junior reloader. (all components) (Extras). Write: E. H. Strom, 2020 N. Seventh. Harrisburg, Pa.

OUR CATALOG OF EDGED WEAPONS DEscribing and pricing a museum collection of swords and daggers will be sent on receipt of fifteen cents in coin. Kimball Arms Company, Woburn, Mass.

INTERNATIONAL ARMS CO. 3 DAY SERVice! Springfields, Enfields, Mausers to Miser's Magnum, $5.00. Jap rifles to .30-06 or .257 x 6.5, $5.00; .300 Savage alteration $13.75 complete. Re-barreling, Bluing, Wholesale prices. 18210 James Couzens Hwy., Detroit, Michigan.

AS SPECTACULAR AS THE NORTHERN Lights, as magnificent as the Taj Mahal, as splendid as the Kohinoor, as new as tomorrow, for connoisseur-collector: Set of 7 Solingen straight razors, ¾", round point, each etched on top in gold days of week, each in separate vertical partitions in brown fabricoid case, with latch; simulated ivory handles; each blade embossed in gold and red; best Silver Steel Solingen; on tang, G. Felix, Solingen, Gloriawerk. Bought in Germany last summer. Doubtful if anything comparable in U.S. $150.00 money order or certified check. Wm. Sims Bunn, Nashville, North Carolina. Member.

← OREGON MYRTLE -- Special!

← BURL PENNA. Black Walnut

GUN STOCKS

We have purchased an entire carload of this rare wood (flitch sawn, cut as the logs are shaped with the bark on) and offer all grades at exceptional prices. STANDARD GRADE, inletted for any modern rifle, with right- or left-hand cheek piece, full close up pistol grip, including grip cap (Bunburst), but not fitted $7.00

OTHER GRADES: $10, $15, $20 and $25, depending on figure and coloring.

SHOT GUN BLANKS: 2¼ to 2½" thick x 16" long ..... $3.00 to 15.00

RIFLE BLANKS: 2¼ to 2½" thick x 33-34" long ..... $5.00 to 20.00

PENNSYLVANIA WALNUT INLETTED STOCKS: Standard Grade 5.00

XX Grade $7.00. XXX Grade $15 to $20. XXXX Grade Burl 25.00

EXTRA FANCY SUPER BURLS 35.00

Walnut Shot Gun Blanks standard, $1.00; xx gr., $2.00; xxx, $5.00 to $8.00. Burls, $10.00 to $12.00. Super burls 15.00

LAMINATED rifle stocks. Combinations of Walnut-Maple, Apple-Wild Cherry, or Oregon Myrtle ..... $12.00 to 16.00

WILD CHERRY AND CURLY MAPLE in grades running from $7.00 to 15.00

NOTE: We turn and inlet your blanks for $5.00. One week delivery.

NEW ENFIELD TRIGGER GUARDS straightened, tang streamlined, polished, reblue with front screw, complete catch pin, spring included ..... $3.50 complete

SPRINGFIELD Sniper Bolts, stripped, new... 8.00

FN ACTIONS: Late style, short or long magazines, with new Sporterweight barrels fitted in Ackley .22-250, .220 Swift, 25 inches long .257 .270 Win. 7mm 30.06 24"... 66.00

FN stripped receivers, new 15.00

FN stripped bolts $11.00; complete bolt 19.00

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SPRINGFIELD: New 4-gr. barrels, late 13.00

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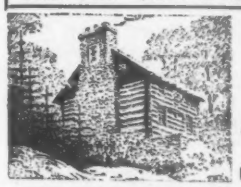

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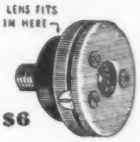

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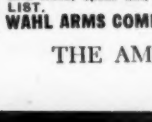

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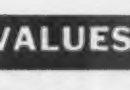

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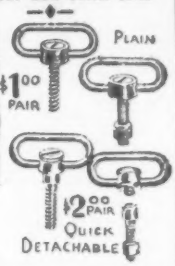

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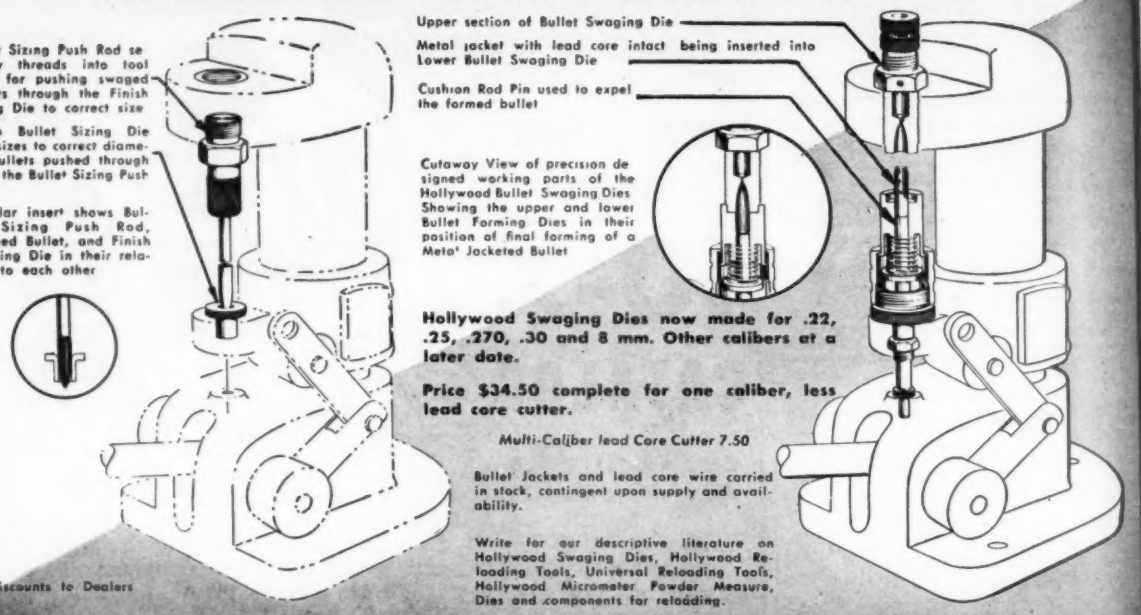
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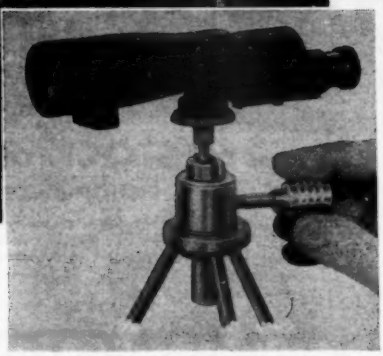

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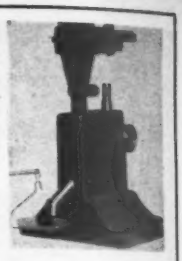

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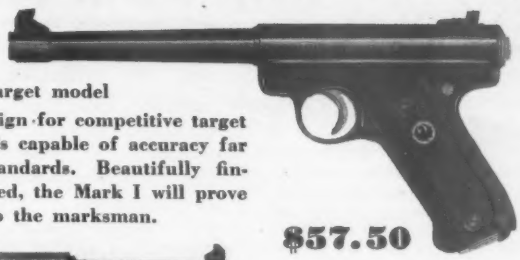

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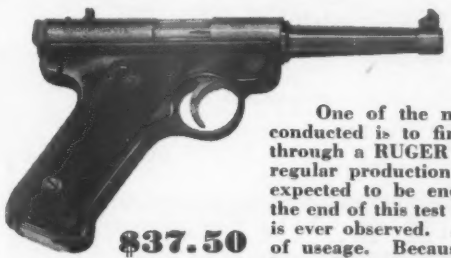

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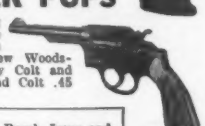

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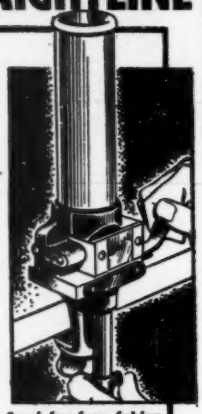

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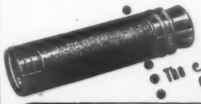

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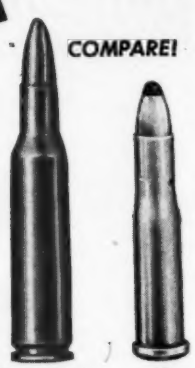

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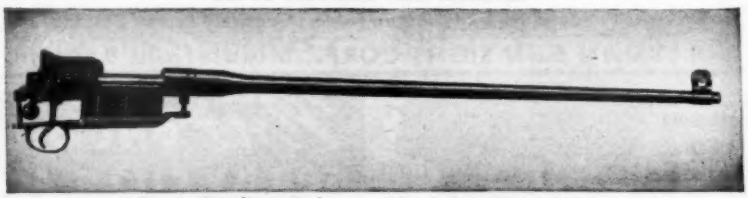

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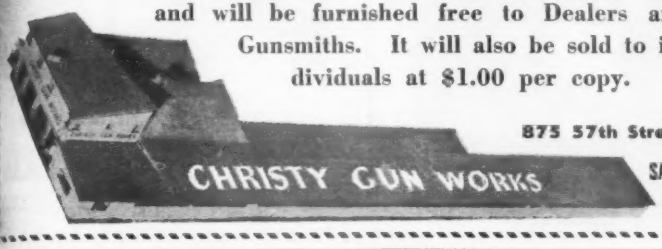

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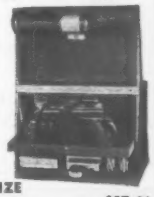

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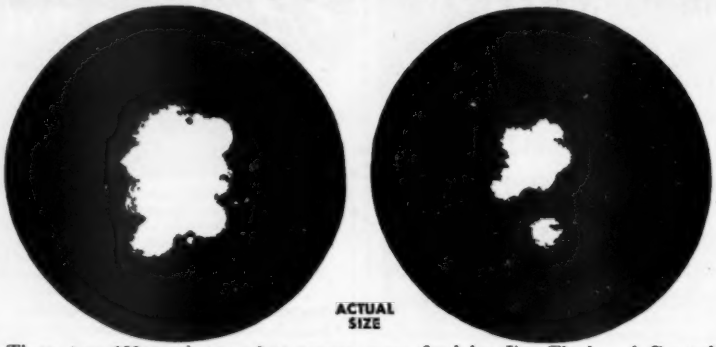

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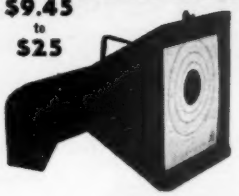

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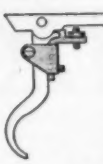

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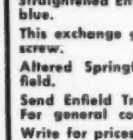

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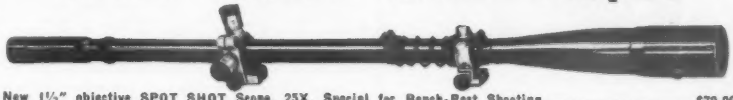

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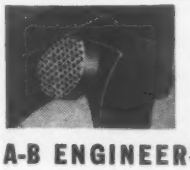

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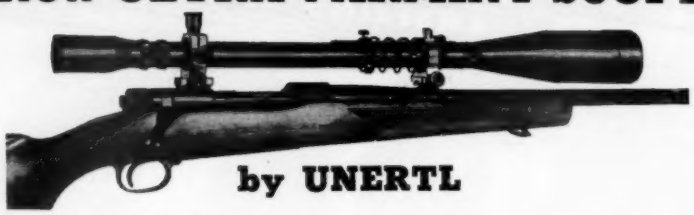

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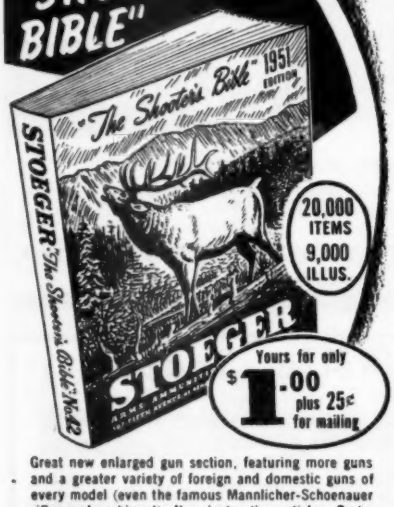

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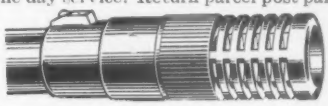

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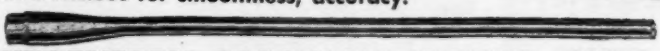

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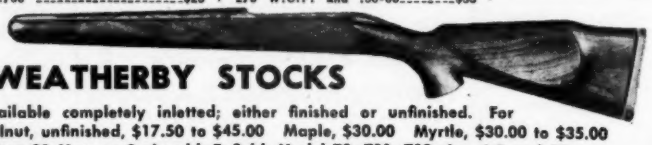

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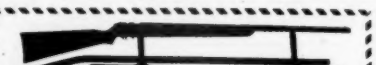

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